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APPEALING TO THOSE ENGAGED IN

THE ART OF BUILDING.

*IT is our aim, our ambition, our aspiration even,
to build our Journal worthily and well, not
for the hour only, but for future years; for the
few men in the forefront of an enduring and
a laborious Art; for the disciplined ranks of a
distinguished Profession; for the young men—
Architects to be—and for all who love a clustered
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or a Greek frieze; for the man, too, who honestly
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Summary.

The Board of Education's recently-issued rules for the planning and fitting-up of public elementary schools state that no school should ordinarily be built to accommodate more than 1,000 to 1,200 children in three departments, and no single department should accommodate more than 400 children. The best plan is that of one floor: in any case it is desirable that there should not be more than two floors: a building of three floors is open to many objections, and should only be proposed in special circumstances or on very costly sites. (Page 2.)

A Chamber of Commerce report from Alexandria shows how very incompletely British manufacturers are looking after their interests in Egypt in respect of the great amount of building now going on there. The chief cause of complaint is that they will not adapt themselves to the market, which requires cheap goods even though they may be inferior. (Page 2.)

Reports state the building trades to be busy in Canada and New Zealand, but in South Africa the labour market is overstocked by the large number of new arrivals: no one is allowed to land unless he has secured definite employment and possesses £20. (Page 12.)

Six important points on sanitation, constituting an outline of the legal requirements, are given on p. xiii.

Mr. John Begg, consulting architect to the Government of India, is by no means sure that the proper method of treating verandas on the Anglo-Indian house has been arrived at, a doubt which is shared by Mr. D. Gostling, F.R.I.B.A., who instances the foolish verandas of the Bombay High Court, where, every day of the monsoon, his Majesty's judges have to walk through a flooded corridor 40ft. long, over which they step on logs of wood and flat stones specially placed for that temporary purpose every year. (Page 8.)

A new pulpit has been erected in Bristol Cathedral. Mr. Bodley was the architect. (Page 12.)

The new west window of Exeter Cathedral, which replaces Peckitt's glass, is approaching completion. (Page 12.)

The building trade throughout the country was generally depressed during 1903, though reports from some towns speak of a good year. (Page 9.)

Durham Cathedral organ is to be rebuilt. For twenty-seven years it has been in daily use, and only lately has it shown signs of breakdown. (Page 6.)

The time for sending in designs for new free library and public offices at Ilkley has been extended one month. (Page 12.)

In Essex there is no stone, the soil being mostly "London clay," with occasional outcrops of chalk. (Page 10.)

The restoration of the abbey church of Wymondham is being conservatively carried out. (Page xiii.)

The Iroquois Theatre Fire.

PARTICULARS of the terrible fire at the Iroquois Theatre, Chicago, have been so numerous and so conflicting that it is difficult to arrive at any definite conclusions in regard to them: but the cause of it is now stated for certain to have been the flicking of an arc lamp, which set fire to some drapery at the top of the curtain, and that the "fireproof" curtain was prevented from falling to the stage by the electric-light reflector which presumably jammed it. That this should have happened is of course nothing but criminal carelessness on the part of the operator. Having stuck half-way down, the curtain was just like a damper in a flue. How many exits in the auditorium were open is not stated, nor how many were open on the stage, nor whether there were any openings in the roof; but the fact that the flames were drawn with such terrible fierceness right across the auditorium—they could not have been forced from the stage—proves that the draught was on that side, augmented doubtless by whatever doors were open behind the scenes. Had the curtain not become jammed it is probable that no panic would have occurred, though it must not be forgotten that the theatre was darkened at the time. When the cry of "Fire" arises in any assembly it must make the stoutest heart quake, and it is only those who keep their presence of mind that are likely to look for what exits are open. In this theatre, as has happened over and over again, the people rushed for the one or two exits by which they had come in; how many of the twenty-seven double exits were locked we do not know, but there must have been several which, though open, were not thought of in the frantic struggle. This emphasizes the necessity, so often insisted upon by fire experts, that not only must there be plenty of exits, but the people must, by altering their ingress at one time and another, be made to know that there are other means of escape than by the door through which they entered. It has been truly observed, "The public will not stop to read directions with death staring them in the face," and this applies equally to hotels, in which it is now the custom to see plans of the floors hung so that guests can see their way out—such plans should be in every bedroom, and every guest should make a point of studying them. At the Iroquois Theatre it seems that the whole fatality was ascribable to the failure of the curtain to shut off the stage from the auditorium. In London it is the custom—though there is no absolute stipulation—to lower the curtain before every performance. Apparently no such custom obtains in Chicago. Yet its importance cannot be over-estimated, and we consider that a clause should be added to the L.C.C. regulations

stipulating it. At present the regulations only state that "the proscenium shall be provided with a fire-resisting screen to be used as a drop curtain, of such pattern, construction and gearing, and with such arrangements for pouring water upon the surface of the screen which is towards the stage, as may be approved by the Council." It is reported that the curtain at the Iroquois Theatre was of asbestos and that it was burnt. This could never have happened; though as no water spray was brought to bear on the screen it is possible that its metal connections may have dropped away and let the asbestos sheets fall. But such curtains seem to be an exception in new theatres in America, where iron roll screens are preferred; doubtless with a water spray they are effective, but surely in this particular case an iron roll screen would have soon got red hot and radiated fearfully on both sides. This terrible catastrophe at Chicago shows more than ever the necessity for a strict fire-watch (so regularly observed in London theatres) and the daily inspection of the fire appliances provided: and as regards these last we would draw attention to the remarks of Mr. Arthur Shean, consulting fire-brigade officer, who says that the hose attached to hydrants, instead of being detached and kept rolled up above, should be always connected and ready for instant use by the inexperienced persons who would probably have to use it.

The Steeplejack.

HORACE says that the breast of the first navigator must have been armed with triple steel. If that were so, then the first steeplejack must have had an equal courage. But we have ceased to regard the navigator as a particularly brave man, and the steeplejack has been so long with us that we are apt to forget the dangers he runs; it is only when an accident occurs that these are vividly recalled. Such an accident has just happened to a steeplejack named Towie whilst building a new chimney at Messrs. Sykes's bleach-works, Edgeley. He was on the chimney top attending to the working of the pulleys from the ground when his hand became entangled in the ropes, and he was lifted to the pulley top, where his fingers were jammed in the wheels. The men working with him at once gave the signal below to cease hauling in the rope. Meanwhile Towie remained suspended at a height of 300ft., and remained so for ten minutes. When released from his terrible plight, a rope was tied round his waist, and in a fainting condition he was lowered to the ground, where it was found that the fingers had been practically torn from one of his hands. He is now in Stockport Infirmary.

DRAWINGS OF ARCHITECTURE.

IN the first of our series of drawings of architecture we published a line drawing by Mr. W. H. Bidlake, and we then spoke of a pencil drawing by him which we thought was a very fine example of draughtsmanship. This drawing, of Lincoln Minster, is published in our centre plates this week. It is essentially an architect's drawing carried out with a thorough knowledge of construction, a most careful drawing, but one in which formality is subdued and a very soft effect produced. Another example of Mr. Bidlake's pencil work, reproduced by a different process, is given below.

Mr. Muirhead Bone is a follower of Whistler, and he seeks subjects after the manner of that great artist. Scaffolding and rough builder's work seem especially to attract his facile pen, and the ability with which he transfers the impression to paper is wonderful. The reproduction on the opposite page is an example of this. As one detail in a drawing full of interest, let it be noted how skilfully the workmen are put in and how the traffic passing by in the Strand is rendered. Everything is there, yet no suspicion of the photograph asserts itself. This drawing ranks with Mr. Bone's best, and we are very glad to be able to add it to our series.

ELEMENTARY SCHOOLS.

Board of Education's Rules.

AS briefly announced in our last issue, the Board of Education have recently issued rules to be observed in planning and fitting up public elementary schools.

These rules are intended to be regarded as embodying the result of the experience of the Board in school planning, and to show education authorities, school managers and their architects what the Board deem essential in the construction and design of school buildings; but in other respects they are not meant to restrict liberty of treatment.

No school should ordinarily be built to accommodate more than 1,000 to 1,200 children in three departments. No single department should accommodate more than 400 children. A large school in three departments might conveniently be divided in the following proportions:—Boys 360, girls 360, infants 380. For departments of this size the most suitable plan is that of a central hall with the classrooms grouped round it; as a rule such a department would probably require seven classrooms. Smaller departments may be planned conveniently with the classrooms opening from a corridor. For small schools a large room with one or more classrooms will be sufficient. There should always be at least one classroom.

Where the site is sufficiently large, open and fairly level, the most economical plan is that of a school on a single floor. Such an arrangement is also preferable on educational grounds. In any case it is desirable that a school building should not be on more than two floors. A building of three floors is open to many objections, and should only be proposed in special circumstances or on very costly sites. Before instructing an architect it is desirable that careful regard should be had to the size and circumstances of the school and to the number and qualifications of the staff to be employed. These considerations will determine approximately the method of grouping the scholars for instruction, and on this will depend the number and the accommodation of the rooms of which the school building should consist. The annual cost of maintenance should be borne in mind as well as the initial capital expense.

BUILDING MATERIALS FOR EGYPT.

The Lack of British Enterprise.

IN a report of the British Chamber of Commerce of Egypt (Alexandria) attention is drawn to the meagre supply of building materials by British manufacturers for the enormous amount of building construction at present being undertaken in Egypt. At the root of the defect appear to be the characteristic unwillingness of British makers to enter the market and cater for the needs of the country, the absence of direct representation, and the high price of British goods. The preponderant demand in Egypt is for cheap articles: they may be inferior, but they must be cheap.

To take steel joists as an example, Belgium and Germany enjoy the practical monopoly of the trade and can undersell Great Britain by as much as £2 to £3 a ton. They supply an article which suffices for all practical purposes and passes all the necessary tests, and yet is inferior in quality to English steel; it will not stand rolling into small sections and thin plates, which are consequently supplied by England. There appears no reason why our country should not be able to take a share in the trade by manufacturing a lower grade but serviceable quality.

In lead and iron piping, in sanitary goods, in paints and oils, in ironmongery for doors and windows, it is the same story—Great Britain will not condescend to cheapness.

For a given diameter the foreign maker will offer a lead piping that is thinner in section and consequently lower in price than the English one, and yet will satisfy the tests prescribed. The well-known patterns of Doulton, Jennings and Shanks in sanitary appliances are universally imitated in lower qualities.

Paints and oils of English manufacture are better represented than they used to be, but their high price still rules them out of the market for building purposes. Lifts are supplied almost entirely from Italy, English manufactures in this department being absolutely unknown. In fact, the only line in which Great Britain is adequately represented is that of building machinery and implements.

It is a feature in Government work for bridges, &c., put up for tender that the contractor is invited to submit his own plans. This is no doubt an economy for the Government, but it directly encourages the drawing of plans adapted to the inferior material. Such, however, being the conditions, it behoves the British manufacturer to fall in with them if he is to enter the field with his competitors on anything like equal terms.



DRAWINGS OF ARCHITECTURE: W. H. BIDLAKE.



DRAWINGS OF ARCHITECTURE: THE GAITY EXCAVATIONS, BY MUIRHEAD BONE. 7

Enquiries Answered.

The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Right of Light.

LLANDUDNO.—S. T. writes: "A is the owner of a house erected early in 1884 right up to the boundary of his land, the roof of which overhangs his neighbour's land. Has A acquired a prescriptive right for his roof to remain?"

This question should be put to a local solicitor, to whom the exact position of affairs can be explained. Do the footings encroach upon the neighbour's property also?

G. A. T. M.

Ventilating a Water-closet.

FAREHAM.—A. C. N. writes: "I have had great trouble with a w.c. in a house which is being repaired. The system of ventilation is very bad, the foul air remaining some time in the closet after being used. I send a rough sketch (not reproduced). Would a ventilator over the door effectually prevent the foul air from remaining?"

It is not desirable to ventilate the w.c. from the inside of the house. The best plan would be to light and ventilate the closet by means of a window in the external wall.

T. E. C.

Setting Back Building Line.

PORTSMOUTH.—VIA writes: "I have a client who wishes to build at one side of a plot of ground bordered by an avenue 15ft. wide. He is willing to set his front fence back so as to allow for a 36ft. street, and a roft. building line in addition, and to give the land, although the conveyance does not mention anything about a 'street,' the avenue being simply a road to gardens. The U.D.C. has refused to pass the plan unless both the owners A and B set back their fences, which my client is of course unable to enforce. I am under the impression that a house can be built in any position, if properly drained and supplied with water, which this would be. The council says that in their opinion 'it is

by-laws under which the urban district council refuse to pass the plans for your house, but it is usual for such by-laws to stipulate that a new street shall not be less than 36ft. wide and that one entrance at least of that street shall be of that full width and open from the ground upwards. A strong case in point is *Bromley Local Board v. Lloyd* (March 25th, 1892, L.T., Ch. D., vol. lxvi., N.S., p. 462). If, therefore, the local by-laws contain the above provisions, I consider the council's refusal to pass your plans is legally in order. It would make no difference if B built the house, unless indeed he could face it to the "main road" shown on your sketch. I do not think the 15ft. "avenue" leading to some gardens could possibly be said to be an old "street" because apparently there are no houses at present facing it. Were this the case my answer would be a different one.

F. S. I.

The Circumferentor.

ABERDARE.—E. G. H. writes: "Would the circumferentor illustrated in Thornton's catalogue, p. 123, serve as a theodolite for practically all cases? I notice that Mr. Merritt in his book on Surveying says the circumferentor has reached such a state of perfection that it can be made to serve practically for all the uses of the theodolite. Does this remark apply to the same circumferentor? I want an instrument to take vertical and horizontal angles, and the circumferentor is now made to read to one minute; but with the ordinary sights can an angle be taken with this degree of accuracy? Of course the price of a good theodolite is entirely out of the question."

Possibly I am prejudiced, but I have used a theodolite for very many years, and should not at all like to trust a circumferentor to take its place. Good second-hand theodolites are always obtainable at a reasonable figure—a 5in. plain or transit instrument (latter preferred) being all that is necessary. It will last a lifetime with ordinary care. Try an advertisement in the "Exchange and Mart," using its deposit system, and try any instrument offered you before completing purchase.

G. A. T. M.

The Temple Church, London.

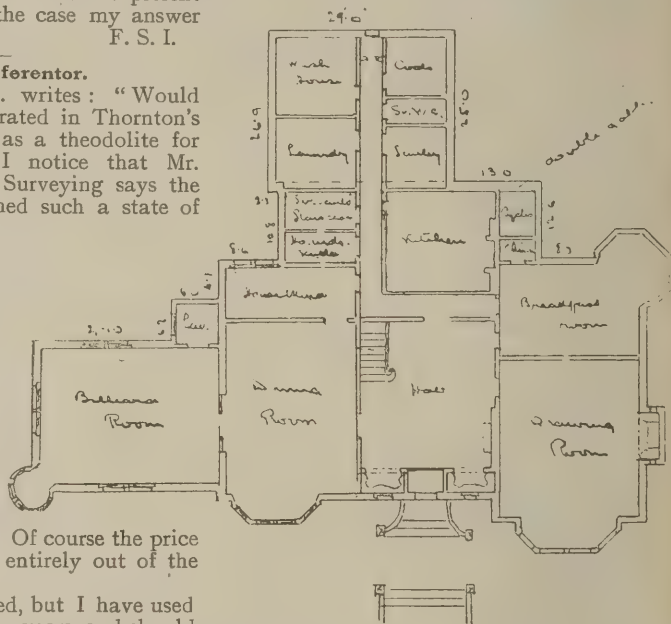
WINCHESTER.—H. W. writes: "This church is considered to be one of the most perfect specimens of Early Gothic architecture in England. The round portion of the church was consecrated in 1185 and the nave in 1240. It is the largest and most complete of the four remaining round churches in England. I should very much like to know where the other three are situate, and if there is any book which gives descriptions of them; also if any one of the three is built on the same plan as the Temple Church, namely, that of the Church of the Holy Sepulchre at Jerusalem."

There are four round churches in England, these being the Temple Church, London, which was connected with the Order of the Knights Templars; the Church of St. Sepulchre, Cambridge; the Church of St. Sepulchre, Northampton; and the church at Little Maplestead, Essex. These three last were connected with the Order of Knights Hospitallers. Particulars may be found in the second volume of a work by Prof. T. J. Bonney, entitled "The Cathedrals, Abbeys and Churches of England and Wales," published by Cassell & Co. I have also seen circular foundations on one of the cliffs at Dover which I was locally assured were those of a former Templars' church, but I do not know on what authority this information rests.

G. A. T. M.

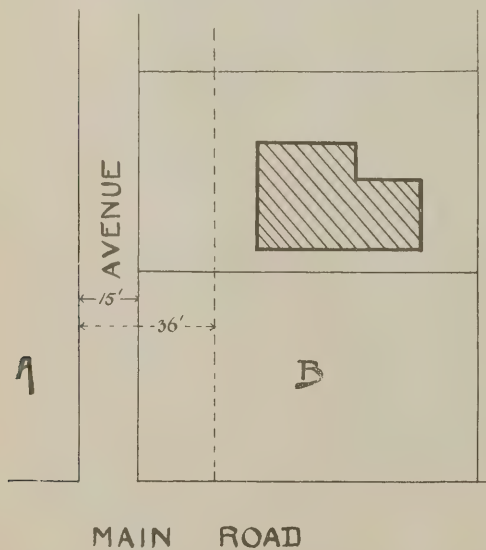
Charges for Two Kinds of Building Work in a House.

INVERKEITHING.—SUBSCRIBER writes: "The accompanying illustration shows the ground-floor plan of a house erected for a client. In accordance with his instructions sketch plans and working plans of a square house with back wing were prepared, and passed by the local authorities. The client then changed his mind about a square house and authorized the present plans to be prepared, according to which the building was erected. I presume that in addition to the 5 per cent. on the cost of the house I am entitled to charge 2½ per cent. on the estimated cost of the original plan. Quantities were prepared from the first plan and these were issued to the contractors before the client changed his mind, and it was agreed that these should



serve for the new plans, the work being measured up when finished. The house is built of stone. It was specified in the schedule (for the square house) that the 'front and side walls of main house' were to be faced with dapped coursers set and jointed in putty, while the 'main back wall and walls of back wing' were to be faced with square-dressed finely-dapped rubble in random courses. The difference in the accepted offer between the two classes of work is 5s. 6d. per sq. yd., the latter being the cheaper. The contractor arranged privately with the proprietor to do the whole building with the higher-priced work, while the prices would remain as in the schedule, that for the front and sides at the high rate and the back wall and wing at the cheaper rate. With the present plan the question arises as to how much is to be classed into the cheap price and how much into the high price, or otherwise—what exactly is the 'main back wall'? The contractor is now dead and the work was completed by the trustees. There are also certain outhouses apart from the main building, such as stables and coachhouse, pothouse, &c., which were estimated to be done in random courses, but by the request of the proprietor portions of these were built with coursers. Are these also to be classed at the reduced rate, as in the case of the back wall, or at the exact schedule price?"

(1) You are entitled to 2½ per cent. on the estimated cost of the original plan and 5 per cent. on the executed plan. (2) The account is somewhat confusing, but as far as we understand the circumstances the contractor agreed to put in the better-class work throughout without charging an extra. It therefore seems clear that the right course to pursue is to charge the whole of the coursed rubble work at an average price



the common intention to lay out a street, but they do not ask me to furnish a plan or section, which I think is rather contradictory, under the Model By-laws. I may say there is no intention to do so. Do you think it would facilitate matters if B built the house?"

You do not send a copy of the local

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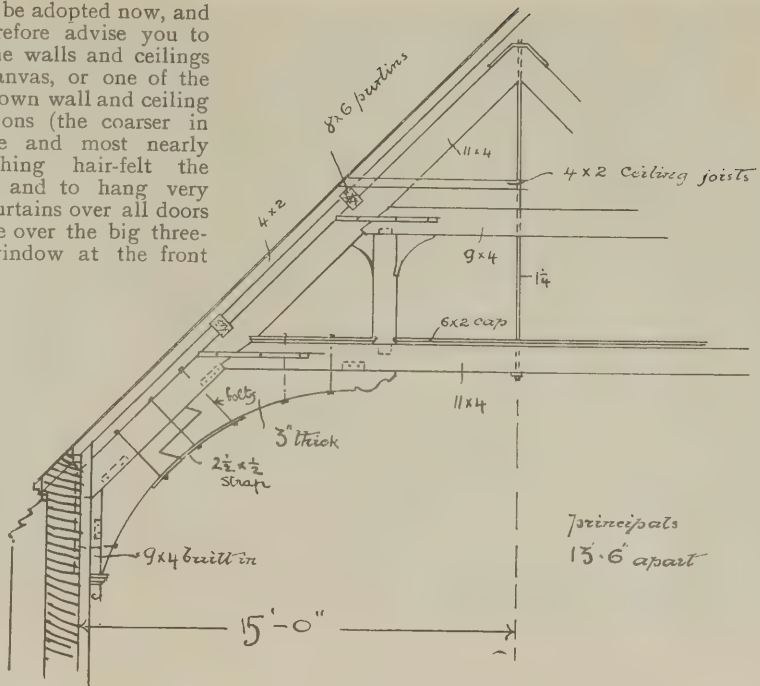
and the random rubble wherever used at the lower price. This means that you should take the original bill of quantities, price out the quantity of coursed rubble according to the original plan at the higher price first quoted, and also the quantity of random rubble in the same way at the first-quoted price of 5s. 6d. per sq. yd. cheaper; then add these totals together and also the quantities; divide the former by the latter figure and this will be the price to charge for coursed rubble on the executed plan. Where random courses are used in outhouses charge them at the first-quoted cheaper price.

Echoes in a Building.

YORK.—ECHO writes: "In the building shown by the accompanying illustration there is said to be a disagreeable echo when the speaker is in either position indicated. This, however, is only said to be very pronounced when the gallery is empty. Do you think it is possible that the voice is reflected from the end wall above the gallery, at each side of the large window, or from the glass of the window itself, on to the ceiling and thence to the ground floor, as indicated by dotted lines? Is it likely that the plain plastered wall at one side, without windows or other break, contributes to the effect, or that the raised ceiling of the end bay does? Can you suggest any remedy?"

A somewhat similar problem was dealt with on p. 25 of our issue for August 12th last, which you should refer to; also to an article on acoustics in "Specification No. 6," where it is explained that the acoustical properties of a building depend very little on the shape and very much upon the cubical contents and the materials of which it is built. We have calculated, as near as we are able to from the small-scale drawing and the somewhat meagre information you send, the duration of sound in the building after cessation, according to the formula and coefficients of absorption given in "Specification," and find it to be about $1\frac{1}{4}$ secs. This is too great for the good hearing of spoken sounds, though where music is to be heard a duration of 2 secs. has been found to be best. With spoken sounds there should really be no duration at all, but about $\frac{1}{2}$ sec. would be satisfactory. The fact of the gallery being empty increases the duration of the sound to about $1\frac{1}{2}$ secs. As to a remedy, the shape must be accepted as fixed, but if it were not, the most satisfactory method of overcoming the difficulty would have been either to decrease the cubic capacity by lowering the roof, or to increase the seating accommodation (persons being the most absorbent material) by enlarging the gallery or carrying it partly along the sides of the hall. However, these courses

cannot be adopted now, and we therefore advise you to cover the walls and ceilings with canvas, or one of the well-known wall and ceiling decorations (the coarser in structure and most nearly approaching hair-felt the better), and to hang very thick curtains over all doors and one over the big three-light window at the front



of the hall. The seats should have heavy cushions covered with thick cloth, and heavy carpets should be laid down in the aisles and passages. By this means the duration of sound will be reduced to about $\frac{3}{4}$ sec., and this will be slightly improved when the organ is put in. The unbroken wall and the raised ceiling contribute very little to the defective acoustics.

H. K. D.

Shutters for Lunatic Asylum.

ENNIS.—ASYLUM writes: "What would be the best shutters to use in a lunatic asylum, also locks for fastenings of same and for window sashes? Is there any special pattern or make?"

Use ordinary single-folding shutters, with flush panels, the upper panels filled in with small mesh (about $\frac{1}{4}$ in.) strong galvanized wire to admit light; the shutters to be arranged to lock open and lock shut. Suitable locks for this and for window sashes are made by Gibbons, of Wolverhampton.

H. C. P.

Cost of Brewery.

EDINBURGH.—R. E. S. writes: "What would be a fair price per cubic foot to allow for a brewery (cubic measurement about 180,000 ft.) in the North of England, to be substantially built of brickwork in cement-mortar, with steel construction to carry plant, and con-

Open-Timber Roof-Truss.

OLDBURY.—B. D. V. writes: "Are the framing and sizes of the truss shown by the accompanying drawing satisfactory, and are the purlins strong enough?"

This truss appears to be stiff and generally suitable. The 9 x 4 upright at the foot to be built in edgewise is rather a novel arrangement, and not altogether desirable, as it is liable to rot where the air is excluded. A 6 x 6 upright, not built in, might be substituted if the corbel is made sufficiently strong, as it will have to carry a heavy load.

HENRY ADAMS.

Strength of Roof-Truss.

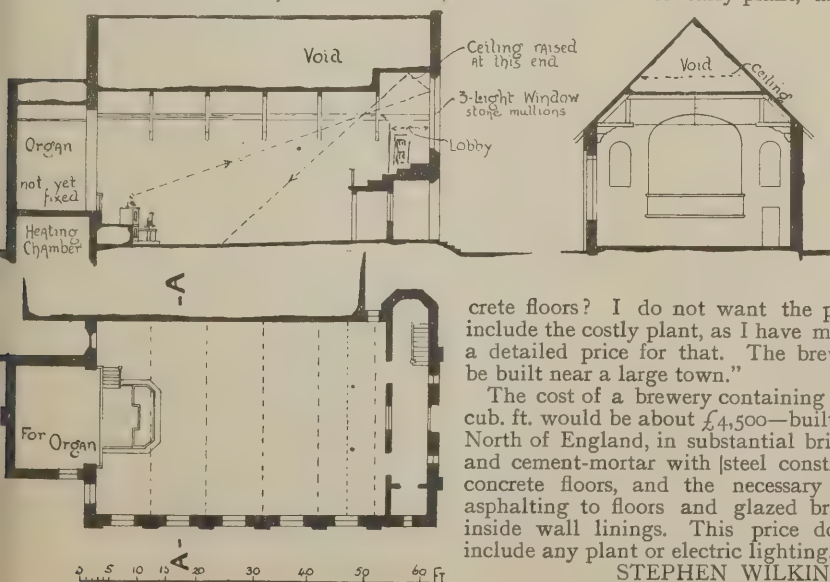
LONDON, S.W.—ANXIOUS writes: "Kindly give me your opinion of the roof-truss shown on the accompanying tracing (not reproduced) with regard to construction and scantlings."

This truss should be strengthened by a 4 in. by $\frac{3}{4}$ in. wrought-iron plate on the soffit of the curved braces, held by five of the bolts from the wall-plate upwards, on each end of the truss. The bolts should be square to this plate. The 9 in. by 5 in. by $\frac{3}{4}$ in. washer-plate on the back of the principal rafter at the foot does not seem to be of any more use than an ordinary washer, as its resistance against the wood would very much exceed that of a $\frac{3}{4}$ in. bolt. The buttresses appear to be rather light for so large a roof, and the stone corbels at the feet of the truss would be better if built-in another 4 $\frac{1}{2}$ in. HENRY ADAMS.

[The above query comes from a firm of two architects, one of whom is a F.R.I.B.A. and the other an A.R.I.B.A. It is not right that architects in good practice should apply to our free columns for such assistance as this; and in answering it we fear we are depriving someone of a legitimate fee.—ED. B.J.]

A Road Contract.

NANTWICH.—J. F. H. writes: "I undertook a contract at so much per yard for 335 yds. of 6 by 6 setts laid and grouted in mortar. After the contract was accepted and before commencing work, the clerk of works decided to lay the setts in sand, which was done; afterwards he and the company for whom I did the work decided to have the setts partly filled in with chippings, grouted in mortar, rammed in with bar, and again finished with chippings on top. The clerk of works has altered the boring pegs several times, causing me extra expense in



crete floors? I do not want the price to include the costly plant, as I have made out a detailed price for that. The brewery to be built near a large town."

The cost of a brewery containing 180,000 cub. ft. would be about £4,500—built in the North of England, in substantial brickwork and cement-mortar with steel construction, concrete floors, and the necessary Seyssel asphalt to floors and glazed bricks for inside wall linings. This price does not include any plant or electric lighting.

STEPHEN WILKINSON.



NEW AMSTERDAM THEATRE, NEW YORK: THE FOYER. HERTS AND TALLANT, ARCHITECTS.

taking up setts, packing with sand, and relaying, for which he does not want to pay. Can I have it thrown to measure work, and what is it worth per yd. super. measured? Setts cost about 15s. per ton on bank, sand 3s. per load, chippings 9s. per ton on bank; labour laying setts and pruning 9d. per yd.; labour getting out ground 4½d. per hour. No agreement except giving price for 6 by 6 setts laid and grouted in mortar."

You are entitled to payment for the extra work involved in taking up and relaying the setts, provided that such extra work was not caused by any neglect or defective workmanship on your part, but was entirely due to the alteration of the original floor levels by the clerk of works after the work had been properly executed. Taking your original contract price as a basis, you can probably arrange with the clerk of works upon a fair price per yd. super for the work as actually carried out, together with an allowance for the extra cost involved in taking up and relaying certain portions as ordered from time to time. An exact statement of cost cannot be given without an intimate knowledge of all the local conditions, but approximately the price per yd. super is as indicated in the following analysis (one ton of 6in. granite cubes is taken to cover 3½ yds. super. of paving):—

	Per yd. super.	s.	d.
10 ton 6in. granite cubes at 15s. per ton delivered	-	4	6
1½ yd. cube of sand at 3s. per yd. cube delivered	-	0	2
Chippings and mortar to joints	-	0	6
Labour, say	-	1	1½
		6	3½
Add 5 per cent. for superintendence, use of plant, &c., say	-	0	3½
		6	7
Add 10 per cent. profit	-	0	8
		6	7
Per yd. super	-	7	3
		T. E. C.	

Value of House.

LONDON, N.—H. W. writes: "When a house is to be built of a value of not less than £400, is it right to take this value as its prime-cost value or the value in the market, namely, what it would sell for, based of course on its rental value?"

There is no definite custom to establish this point, which is quite open to argument. M.

Bricks and Mortar.

Aphorism for the Week.

Building hath three conditions: Commodity, Firmness and Delight.—SIR HENRY WOTTON.

THE AMSTERDAM THEATRE, New York, is a notable example of "L'Art Nouveau" throughout, even down to the match-saves. The architects, Messrs. Herts & Tallant, have used all sources of decoration from nature, showing birds, animals, plants, &c., each design being systematically carried out from roots to blossom of plant and flower, all conventionalized with clever originality. Considerable difficulty was experienced in securing draughtsmen competent to carry out their ideas in the decorations. We do not know what the colour scheme is, but should imagine it was pleasing. The salt-cellar boxes are very quaint. The main auditorium seats 1,800 persons, while a roof theatre will accommodate 1,200.—Mr. Bidlake's drawing of Lincoln Minster is referred to on p. 2.

An Old Scottish Mansion.

THE council of the Edinburgh Architectural Association recently had before them a report on Pittencrieff House, Dunfermline, prepared by Mr. Henry F. Kerr, A.R.I.B.A., who said that owing to Mr. Carnegie's munificent gift to Dunfermline all eyes were looking there and it seemed natural that the architects of Edinburgh should revive their knowledge of the old mansion. We cannot claim for Pittencrieff the beautiful detail of Pitreavie, nor the rich outline and varied features of Fordell, both near neighbours, nor the impressiveness of many larger Fife mansions: yet it must be allowed that as a Scottish house it has a peculiar interest and even a beauty of its own. It is rumoured that a new house is to be erected on the site and the old walls pulled down. Mr. Kerr urged

its preservation. If it were impossible to add to it or incorporate it in some way with a new mansion, then an honourable use should be found for it. He suggested that with only trifling modifications it could be made to serve for a museum of local antiquities. Perhaps some rooms might be treated as rooms of the seventeenth century. The top floor, which architecturally has no interest, might be cleared from end to end and a great gallery formed, after the manner of many seventeenth-century houses and when covered by a new roof (which is required) a great arched plaster ceiling might be thrown over the gallery, representing the finest work of Scotland, as at Winton, Pinkie, Binns and Craigievar.

Durham Cathedral Organ.

It is of interest to know that the life of an organ is not longer than thirty or forty years. It has then to be rebuilt: not because it is past use—age, in fact, improves the tone and sympathy of the pipe-work—but an organ is mechanism as well as pipes, and it is this part that wears out. These reflections are suggested by the announcement that the great organ in Durham Cathedral is in need of thorough repair. For twenty-seven years it has been in daily use and only lately has it shown signs of breakdown. The Dean and Chapter have decided to have the instrument rebuilt, the whole of the mechanism being replaced by the best modern work, the case and pipes of the present organ, with the parts which are not subject to wear and tear, being incorporated in the reconstruction. The work has been placed with Messrs. Harrison & Harrison, of Durham.



NEW AMSTERDAM THEATRE, NEW YORK.

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THE NEW AMSTERDAM THEATRE 214, WEST FORTY-SECOND STREET. NEW YORK. HERTS AND TALLANT, ARCHITECTS.



WAITING-ROOM AND SMOKING-ROOM.



THE STAIRS. LOOKING FROM THE UPPER HALL.

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ARMoured CONCRETE LATTICE-GIRDERS.

SINCE the advantages of the modern armoured concrete constructions have become known, numerous attempts have been made to secure maximum efficiency with a minimum expenditure of material and at a minimum cost of manufacture. A Zurich architect, Mr. Franz Visintini, has now succeeded in designing armoured concrete lattice-girders for building purposes, which, he claims, possess all these advantages.

As is well known, the advantages of a framework girder are due to the favourable distribution of stresses, which all act in the central plane of the members, and also to the fact that framework girders require less material than solid ones, and are therefore considerably lighter. In the Visintini girders the members subject to compression are made of concrete, while those subject to tension are made of concrete with an iron core. In

and lower flanges and the struts of the girders form passages (of triangular cross-section) running transversely to the girders, and these spaces containing air prevent the transmission of heat, cold or sound through the ceiling. Another advantage claimed is that passages immediately adjoining the upper flanges can be utilized as flues for heating the floor.

Another construction of floors with armoured concrete girders consists in arranging them at certain uniform intervals apart and bridging over the spaces with auxiliary girders (also armoured concrete lattice-girders).

When these girders are to be used for making terraces or flat roofs they are provided at one end with a drip and connected to form a roof in the way described, the roof being given a gentle slope in the direction

of the girders and covered with a layer of asphalt. Fig. 3 shows such a construction and at the same time illustrates the use of armoured concrete girders as wall-plates.

The girders can also be used singly as columns, or connected together to form a wall. Fig. 4 (see next page) shows clearly how openings are to be made in such

walls. In building staircases the girders are especially applicable, being thoroughly fire-resisting and very light. It is a point in favour of the new construction of staircases that the parts arrive in the building all complete, so that it is a comparatively simple matter to put them together. A staircase built of armoured concrete is illustrated by Fig. 5. The riser is constituted by an armoured concrete girder with a tread connected to the lower flange. The girder may be either supported at two points or be a

upper and lower flanges these cores consist of cylindrical rods to which the iron cores of the struts are connected by bending their ends round the cores of the flanges (see Fig. 1). No sliding of the iron cores of the struts on those of the upper and lower flanges can take place, owing to the concrete enclosing them, so that concrete in this case replaces riveting.

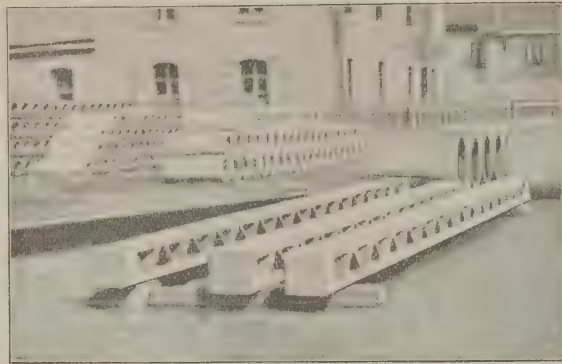
So far as carrying capacity is concerned, there is no absolute necessity to provide members of compression flanges with iron cores, but it is preferable to do so, as this affords the simplest connection between struts and flanges.

The girders can be manufactured away from the building yard. This is a great advantage, as hitherto it has been necessary to build them up *in situ*. They are cast in moulds to which the iron cores are secured.

When used for making floors they are laid side by side and the spaces filled with concrete. In order to prevent single girders from bending, which would cause cracks in the plastering, the floor is made one whole in the following manner:—

The upper flanges of each girder or beam are provided on both sides with longitudinal recesses of such shape as to form, when two girders are placed side by side, a dovetail groove. A small piece of iron is placed in this groove, which is then filled with cement: in this way ample security is obtained against longitudinal cracks in the ceiling. In cellars, larders, &c., where the ceiling is not plastered the separate girders need not be connected together.

Fig. 2 shows how the various kinds of flooring are to be secured to the finished support. For laying a boarded floor, small wood blocks are placed in the dovetail grooves already mentioned before the cement has set, the first batch of boards being nailed to these blocks and forming a support for receiving the flooring boards. In a completed ceiling the spaces between the upper



ARMoured CONCRETE LATTICE-GIRDERS.

the balustrade. Although a staircase built of separate steps is not quite so light as one of iron and concrete which is made in place from beginning to end, and the arms of which are then also in one piece, the Visintini construction claims to combine the advantages of stone staircases with that of being perfectly fireproof; at the same time it is more reliable than a stone staircase, as the small tensile strength of the stone is here replaced by the great tensile strength of the iron cores.

Mr. Visintini says:—

Let us assume that we have a girder section No. 18 of 5'00 m. (16' 5") span, diagrammatically shown in Fig. 6 (see next page), and intended for making intermediate floors in a dwelling-house.

The theoretical span = 496 cm.; distance between flanges $h = 15.5$ cm.; number of sections $n = 16$; width of section $a = 31$ cm.; the load due to the weight 34 kg. per metre run; the external load at 250 kg. per m^2 , 50 kg. per metre run; therefore $g = 84$ kg. per metre run.

For buildings it will be sufficiently exact to assume that the total load composed by the weight is applied to the top flange. The moment of resistance is therefore calculated as follows:—

Upper Flange.

$D_0 = D_1 = (n-1) \frac{ga}{2}$ reaction of the abutment.

$M = \frac{ga^2}{2} \left\{ (n+1) \left(m - \frac{1}{2} \right) - m^2 \right\}$ Moment of resistance in the m^{th} member

$X_m = - \frac{ga^2}{2h} \left\{ (n+1) \left(m - \frac{1}{2} \right) - m^2 \right\}$ Tension

The upper flange being built up uniformly, it is only necessary to calculate the moment of resistance for the middle member, i.e., the M_{max} ; in this case it would be the moment of resistance of the 8th member:

$M_{max} = \frac{84 \times 0.31^2}{2} \left\{ (16+1) \left(8 - \frac{1}{2} \right) - 64 \right\} = 25629 \text{ cmkg.}$

$X_{max} = \frac{M}{h} = \frac{25629}{15.5} = 1653 \text{ kg. compression.}$

Intensity of Stress.

The upper flange is dimensioned as follows:—Width of a beam = 20 cm., thickness of the upper flange 2.5 cm. The upper flange has an iron core of 4 mm., therefore, if $a = 10$, $F = 20 \times 2.5 + 10 \times 0.1 = 51 \text{ cm}^2$, $\sigma_l = \frac{X_{max}}{F} = \frac{1653}{51} = 32 \text{ kg/cm}^2$ compression in the concrete.

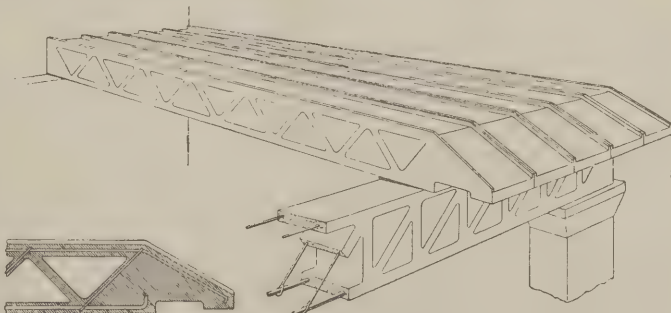


FIG. 3.—GIRDERS FOR FLAT ROOF.

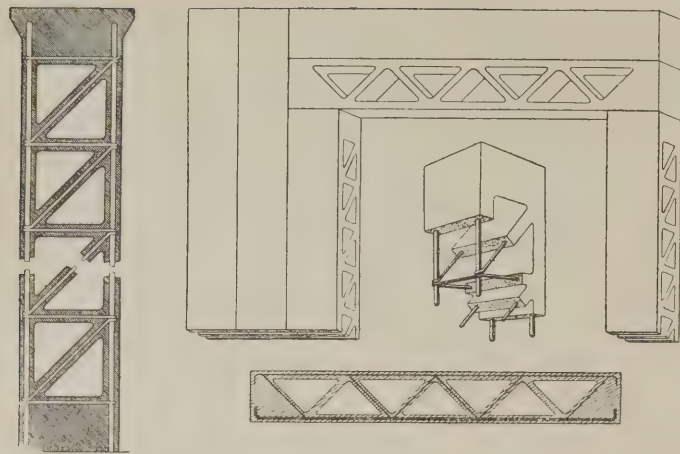


FIG. 4.—COLUMNS BUILT UP OF ARMoured CONCRETE LATTICE-GIRDERS.

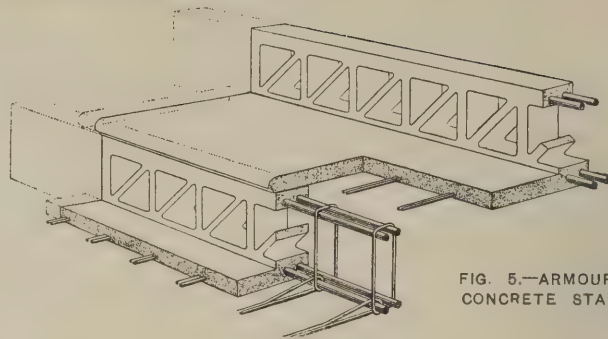


FIG. 5.—ARMoured CONCRETE STAIRS.

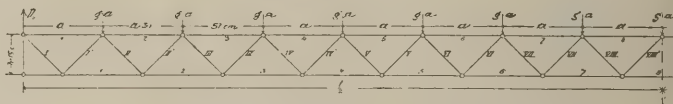


FIG. 6.—DIAGRAM OF STRESSES.

Lower Flange.

$$M_1 = \frac{ga^2}{2} m(n-m) \quad \left. \begin{array}{l} \text{Moment of} \\ \text{resistance.} \end{array} \right\} \text{in the } m^{\text{th}} \text{ member.}$$

$$Z_m = \frac{ga^2}{2h} m(n-m) \quad \text{Tension}$$

$$Z_{max} = \frac{84 \times 0.31^2}{2 \times 0.155} \times 8(16-8) = 1666 \text{ kg. tension.}$$

The iron alone has to take up the tension, therefore $F_e = \frac{Z_{max}}{\sigma_e} = \frac{1666}{1000} = 1.666 \text{ cm}^2$.

If a 14 mm. member is taken with $F = 1.5386$, then the stress on the iron will be $\sigma = \frac{1666}{1.5386} = 1082 \text{ kg/cm}^2$.

Calculation of the Diagonals.

The angle of inclination $\alpha = 45^\circ$, $\beta =$ therefore also 45° . In the diagram the tension diagonals are marked I, II, III, and so on, and the compression diagonals I', II', III', and so on. As the angle of inclination is 45° , the same stress is acting on the tie-rod I as that on the strut I', the same stress on the tie-rod II as on the strut II', and so on.

Q_m is calculated for the m^{th} member, either descending or ascending to the right-hand side, as follows:—

$$Q_m = (n-1) \frac{ga}{2} - (m-1) ga = \frac{ga}{2} (n-2m+1)$$

The tension for the m^{th} member $Y_m = Y_m'$
 $= \frac{ga}{2 \cos \alpha} \times (n-2m+1)$.

Tie-rods.

The rod exposed to the greatest stress is No. I, therefore the first counted from the support $m = 1$.

$$Y_1 = \frac{84 \times 0.31}{2 \times 0.707} \times (16-2+1) = 276 \text{ kg. tension.}$$

$$F_e = \frac{Y_1}{\sigma_e} = \frac{276}{1000} = 0.276 \text{ cm}^2 = 1 \text{ member of 6 mm.}$$

Tie-rod II—

$$Y_2 = \frac{84 \times 0.31}{2 \times 0.707} \times (16-4+1) = 239 \text{ kg. tension.}$$

$$F_e = \frac{239}{1000} = 0.239 \text{ cm}^2 = 1 \text{ member of 6 mm.}$$

Tie-rod III—

$$Y_3 = \frac{84 \times 0.31}{2 \times 0.707} \times (16-6+1) = 202 \text{ kg. tension.}$$

$$F_e = \frac{202}{1000} = 0.2 \text{ cm}^2 = 1 \text{ member of 5 mm.}$$

Struts.

The strut subject to the greatest stress is No. I, that is, the first strut counted from the point of support, rising towards the centre. The compression is equal to the tension on the member I, that is, 239 kg. The struts are 1.5 cm. thick, 20 cm. wide; therefore one $F = 1.5 \times 20 = 30 \text{ cm}^2$.

$$\sigma_d = \frac{239}{30} = 7.9 \text{ kg/cm}^2$$

It is obvious from the above that compression in the member subjected to the greatest stress is 7.9 kg. per cm^2 . This is far below the safe load, and as the members nearer the centre are exposed to a steadily decreasing stress, further calculation is unnecessary.

A test with these lattice girders was carried

out by the Building Office of the city of Zurich. Three girders (600 cm. long in the clear, 60 cm. wide, 21 cm. deep) were placed side by side, resting at each end on dwarf walls, and the load gradually added: the breaking load was 9,706 kg.

Another test was conducted by the Building Office of the city of Vienna. Five girders 8 in. wide were laid side by side, each reinforced by two $\frac{5}{8}$ in. round-iron bars in the lower flanges, and the tension struts reinforced by $\frac{3}{8}$ in. round-iron rods. The span was 20 ft., width 3 ft. 4 in., depth 9 $\frac{3}{4}$ in., upper flange 1 $\frac{5}{8}$ in., lower flange 1 $\frac{3}{8}$ in., struts 1 in.: weight 500 lbs.

kg./m ² .	Load.	Total kg.	Deflection in mm.
268		1,584	1'6
0		0	0'6
268		1,584	1'7
535		3,168	3'7
803		4,752	5'7
1,071 ⁽¹⁾		6,336 ⁽³⁾	7'9 ⁽⁵⁾
1,339		7,920	10'5
1,607		9,504	13'0
1,874		11,088	15'9
2,142		12,672	18'3
2,410		14,256	21'7 ⁽⁶⁾
2,460 ⁽²⁾		14,553 ⁽⁴⁾	—

In the lower flange fine crack in the middle.

English measure:

- (1) 1,071 a square metre = 2 cwt. per sq. ft.
 (2) 2,460 a square metre = 4 cwt. 2 qr. 2 lbs. per sq. ft.
 (3) 6,336 kg. = 6 tons 6 cwt. 2 qr. 14 lbs.
 (4) 14,553 kg. = 14 tons 10 cwt. 3 qr. 17 lbs.
 (5) 7'9 mm. = $\frac{5}{8}$ in.
 (6) 21'7 mm. = $\frac{1}{2}$ in.

At the Government testing-station at Berlin three floors of the same dimensions as that at Vienna were tested.

The girders were nine weeks old:

1st Test.		2nd Test.		3rd Test.	
Load.	Deflection.	Load.	Deflection.	Load.	Deflection.
kg.	mm.	kg.	mm.	kg.	mm.
4,810	5	3,700	4	2,710	2
7,060 ⁽¹⁾	10 ⁽¹⁾	7,540 ⁽¹⁾	11 ⁽¹⁾	7,320 ⁽²⁾	12 ⁽¹⁾
14,330	30	15,990	35	10,870	20
17,310	37	18,010	41 ⁽²⁾	The load is taken off Permanent deflection = 1 mm.	
18,340	42 ⁽¹⁾	19,030 ⁽⁴⁾	—		
19,350 ⁽²⁾	—	Rupture.	—		
Rupture.	—	—	—		
				2,760	3
				7,330	13
				15,470	28
				17,030	40 ⁽²⁾
				18,720 ⁽³⁾	—
				Rupture	—

In all three cases the bending was slow and steady until rupture.

English measure:

- (1) 7,960 kg. = 7 tons 18 cwt. 3 qr. 19 lbs. = 2 cwt. 2 qr. per sq. ft.
 (2) 19,350 " = 19 " 6 " 3 " 17 " = 6 cwt. per sq. ft.
 (3) 7,540 " = 7 " 11 " = 2 cwt. 1 qr. 7 lbs. per sq. ft.
 (4) 19,030 " = 19 " 1 " 1 " = 3 cwt. 3 qr. 19 lbs. per sq. ft.
 (5) 7,320 " = 7 " 6 " 1 " 7 " = 2 cwt. 1 qr. per sq. ft.
 (6) 18,720 " = 18 " 14 " 1 " = 5 cwt. 3 qr.
 (7) 10 mm. = $\frac{3}{8}$ in.
 (8) 42 mm. = 1 $\frac{5}{8}$ in.

The London representative for this system is Mr. E. Merck, 15, Copthall Avenue, E.C.

THE ANGLO-INDIAN HOUSE.

MR. JOHN BEGG, Consulting Architect to the Government of India gave a lecture at Bombay some weeks ago on "The Anglo-Indian House." He said he was by no means sure that the proper method of treating verandas had been arrived at; that buildings ought to be constructed of stone to keep out the heat, that the evolution of bungalows was from the ground-floor veranda-bungalow with tent-roof, first, to the upper-storied veranda-bungalow, which had by force of circumstances evolved into the flat of many storeys; that the flat, owing to the dearth of ground, had come to stay, and that their energies should be devoted to its proper development. He said that lofty rooms, owing to their costliness, were no longer possible, and that through ventilation could only be secured by introducing specially-designed windows just under the ceiling of each floor.

In the discussion which followed the reading of the paper, Mr. D. Gostling, F.R.I.B.A., echoed the lecturer's doubts about verandas. He instanced the foolish verandas of the Bombay High Court, which keep out neither sun nor rain, and showed that every day of the monsoon his Majesty's judges, in walking along the central corridor to their chambers, had to go through a river 40 ft. long, over which they stepped on logs of wood and flat stones specially placed for that temporary purpose every year. Nothing could be done to keep out this rain, because Mr. Adams, Mr. Begg's predecessor, indignantly refused his sanction to the only means by which the rain could be effectually shut out, for the reason that such means would spoil the architecture.

He then instanced the Victoria Terminus Administration Offices, in which, as in the High Court, the area of the verandas is larger than the area of the usable space in the rooms, and yet the railway officials complain, because comfort and convenience have been sacrificed to beauty—the verandas failing to keep out both sun and rain. It is the same in the municipal offices building; the

money has all gone in domes and towers and useless verandas, which the architect refused to allow to be protected in the only possible way—he would only permit useless roller blinds to be put up behind the arches inside the verandas, in order that his pet architecture might always be in full view.

In regard to Mr. Begg's dictum that the proper material was stone, Mr. Gostling said that in every house built of stone in Bombay the furious wind caused the rain to drive through the walls like a sieve, and that the only possible protection was oil paint, which closed up the pores in the stone. Yet the Bombay Improvement Trust had recently issued an edict, obedience to which was impossible, that no oil paint should be applied to their stone buildings. The only lasting protection which could be applied to masonry, whether of stone or brick, was plaster. Nothing else would keep out the driving rain. Yet plaster was Anathema Maranatha to the Trust and to Mr. Begg in his capacity of Government architect.

Forty years ago official Bombay was ruled by a triplet of clever Government architects imported from London, with no local experience, Messrs. Trubshaw, Paris and Molecey, names forgotten by the present generation, but who left their mark in the rules for erecting buildings on the Esplanade. The Trust adopted these rules *en bloc*, the principal one being that the buildings must be constructed of stone or painted brick, the only material suitable to the climate, namely, plaster, being rigorously excluded.

THE BUILDING TRADE IN 1903.

AS in 1901 and 1902, we have to report another bad year for the building trade. The trades connected with building are of course dependent upon the general state of trade in the country, and every trade for the past two years has been much depressed. Money has been tight and consequently the usual quantity of speculative property has not been built, and this has resulted similarly in the number of small speculative builders being somewhat reduced, giving place to firms with larger capital and more standing when cheap residential property is urgently needed, as in the suburbs of the largest towns.

Birmingham.

The number of new buildings erected in Birmingham during the past year has not been so great as that recorded in some previous years, but several important undertakings were completed or commenced. The new City Arcades, although actually completed during the last twelve months, were commenced four or five years ago. The new University buildings are being constructed at Bournbrook (a tender for the superstructure has been accepted), but will probably not be completed for another year or two. The Rowton Houses, begun in June, are still proceeding. The new Central Hall in Corporation Street was opened. A number of important commercial premises have been erected and several extensions made to public institutions. What will probably be the tallest building in Birmingham is being erected in Steelhouse Lane, near what will be the terminus of the new Aston electric tram lines. It is intended for the head-office of the Wesleyan and General Assurance Association, and will provide accommodation for 1,000 clerks. The new home of the Y.M.C.A. is rapidly approaching completion on the site of the old St. Peter's Church, at an estimated cost of £45,000. The Midland Hotel has been rebuilt at a cost of £85,000. A new refuse destructor, stable and stores, &c., was erected in Rotton Park Street at a cost of £50,000.

Cardiff.

Cardiff contractors have not experienced during 1903 the depression so severely as they would have done had they not undertaken work out of town. For instance, there has been a lot doing up the hills, particularly in the Rhymney Valley, and there has also been work in the Port Talbot and Neath districts, but a good number of men have been out of employ in the town, and the outlook for 1904 is bad.

Coventry.

From the official return supplied by the City engineer it is apparent that building operations in Coventry during the past year have been very considerable. It has been, in fact, a record year so far as the erection of house property is concerned. The figures show a substantial increase over the average for the last ten years. Altogether 622 houses were completed during the year, whereas the highest number for any preceding year since 1892 was 501. With regard to the plans submitted to the General Works Committee for approval it is satisfactory to note, as indicating a general desire to conform to the building by-laws of the city, that out of 419 submitted only forty-one had to be rejected. In addition to the unprecedented activity in the building of house property there has been a fair amount of work for factories and workshops, fifteen of which were completed during the year. Employment has been good, though work has been greatly hindered by the very inclement weather. Among the plans sanctioned are those for extensions to the works of Iliffe & Sons, the Swift Cycle Co., and to King Henry VIII's schools.

Eastbourne.

There seems not to have been any special slackness of trade at Eastbourne, and things are expected to improve, although nothing approaching a "boom" is anticipated.

Harrogate.

Building operations in Harrogate during the past year have by no means been so brisk as in previous periods. The fact that several large undertakings which the builders had in hand have been completed, and the temporary depression at trade in the country having somewhat curtailed the demand for dwelling-houses of various descriptions, may doubtless be held to account to a considerable extent for the lull in the building trade, which became apparent with the advancement of the year 1903. The erections of the Grand Hotel and the Kursaal are matters of the past, so far as the building trade and the subsequent employment of labour are concerned, and the only set-off to these important erections in the near future will be the new public library, which will cause an expenditure of £7,000 or £8,000.

Hull.

One authority in Hull declares that the building trade in that port last year was "too bad for words." Empty houses and unemployed joiners are the features of the situation. The only big works in progress are the Municipal Art School, the extension of the Paragon Street Railway Station, and the building of a public hall in Victoria Square. So far as the immediate future is concerned the outlook is gloomy and very nearly hopeless.

Leeds and Leicester.

There was considerable depression at Leeds and Leicester in 1903.

Very few new works of any importance were entered upon in Leeds. Several undertakings, however, have been advanced, including the Roman Catholic Cathedral, the Central Markets, and the new Dispensary, and progress has been made with a number of churches and chapels. Buildings in the new street from Albion Place to Briggate will probably be among the chief works for the present year. Speculative building has not shown any great expansion.

Manchester.

Whilst the building trade did not display any extraordinary vitality during the year, the larger firms found things moderately brisk. Compared with 1902, however, the condition of trade has been nothing like so good. A few large buildings in the city have been completed within the past few months, notably the Midland Hotel and Parr's Bank, and the firms engaged thereon have been fairly busy. If the present growth of new buildings continues there will not be much room for complaint. In the suburbs there has been a large increase in cottage property, whilst within two or three miles of the centre of the city much land has been covered with houses of a low rental. In the districts of Rusholme, Fallowfield and Longsight houses have been increased by the hundred. Labour has been plentiful and cheap. The extraordinary wet weather of the past three months has brought outside work practically to a standstill. Fortunately, however, there has been plenty of inside work to keep workmen engaged, so that very few have been thrown out of employment.

One of the busy departments of the Manchester Corporation during 1903 has been that of the city architect, Mr. H. Price. The department has in hand the Blakeley housing scheme, which provides for the erection of 203 houses; the early Spring is to see the completion of 150 of these. Then there is the Rochdale Road and Sudell Street housing scheme in hand. The committee also have in view a scheme for the erection of workmen's dwellings on a site almost immediately adjoining the colossal shed of the Corporation Tramways Department in Queen's Road, Cheetham, but the plans have not yet been passed. In Bradford Road, which like the other housing sites is in North Manchester, plans are in preparation for a set of workmen's dwellings.

A police and fire station for the C Division was recently opened in Mill Street, Bradford, between Rhyl Street and Brownhill Street. At Newton Street Police Station there is in course of erection, and shortly to be completed, the headquarters of the Weights and Measures Department. The new chief fire station at the junction of London Road and Whitworth Street is in the hands of the builder, and much has been done towards putting in the foundations.

The Victoria Baths in High Street, St. Luke's Ward, have risen, roughly speaking, up to the ground-floor joists.

A contract has been let by the Baths Committee for the erection of a public washhouse, with wash-baths, in Pryme Street, Hulme.

An extension of Smithfield Market has just been finished, and the construction of a cold-store is now proceeding. Offices for letting to users of the abattoirs are being built at a cost of £1,200 in Tack Street, off Water Street.

Newcastle.

Builders have been unusually active, and, though so much work has not been planned and commenced as was the case in 1902, the year has been an eminently prosperous one for the trade, notable even in annals of the past decade. Blocks of offices and shops have been completed in Pilgrim Street, New Bridge Street, Northumberland Street and Grainger Street, whilst in Dean Street, Collingwood Street, Grey Street, Blackett Street, Percy Street and Higham Place various ambitious structures are approaching the final stages. The present year is likely to be almost equally prosperous.

Nottingham.

Despite the fact that depression in some of the local industries has driven a large number of artisans to neighbouring towns and villages, the Nottingham builder was by no means idle within the city boundary. During the past year 1,630 new houses were certified for occupation, and more than 600 minor

alterations to houses and business premises were carried out. Seventeen new streets were constructed, principally at Sherwood, Snainton and Balwell. This year a number of big new business premises are contemplated in various parts of the city, as well as considerable extensions of existing buildings. Shipstone's Brewery Company are making a big extension of their beer stores at Basford, and the tannery in Albert Street, Bulwell, is also being considerably enlarged. A big block of buildings is to be erected on Lenton Boulevard near the castle, the site for which has already been cleared, and the box-making works in Plumtre Street are also to be extended.

Sheffield.

The past year has not been marked by any very great development as regards building in Sheffield.

The largest and most imposing building which was completed during the twelve months was the business premises of Mr. J. G. Graves. Several banks and Council schools have also been commenced or finished. Up to December 23rd there had been 1,934 houses and other buildings certified for habitation: for the previous year the total was 1,977.

York.

The activity in the building trade in York which was seen in 1901-2 showed some falling off during the past twelve months, and the rapid growth of cottage property on the outskirts seems likely to abate. In 1899 the number of dwelling-houses completed was 570; in 1900, 547; in 1901, 441; and in 1902, 351; whilst the total for 1903 is 342. Most of these are small houses planned to meet the requirements of the local authority, and with very little space to spare. Several larger works have made substantial progress during the twelve months. The Haxby Road Board School is practically complete, and the school in Poppleton Road is making rapid progress. Other big undertakings are the North-Eastern Railway offices, which will have cost something like £100,000 when ready for occupation; the extensions at the County Hospital, Rowntree's Cocoa Works, the York Union Bank, and the Post Office.

SCOTLAND.

Aberdeen.

The granite and the building trades in Aberdeen in 1903 have been satisfactory. The staple industry of the city is in a healthy condition, and if there has been no sudden development to record, there has at least been distinct progress. Operatives have had steady employment throughout the year, and this despite the fact that the rapid introduction of labour-saving machinery is necessarily displacing considerable bodies of men. The total output of manufactured granite from the Aberdeen yards shipped from the harbour was a little over 9,000 tons, which, at an average value of £10 per ton, gives the very substantial sum of £90,000. A very satisfactory feature is that the exports to the United States show an increase. With regard to the building trade in the city, which provides an important outlet for local granite, the position during the year has been thoroughly satisfactory. There has been no boom of building, which is not to be regretted, but the erection of new houses and the extension of the city continue, and there is a considerable amount of important structural work in prospect.

Dundee.

When commenting on the state of the building trade for the year 1902, it was indicated that the outlook for 1903 was far from promising. That forecast has unfortunately been entirely verified. It is easy to exaggerate depressions of trade, but the facts at present point to a serious state of matters. The unanimous verdict of those immediately interested in the trade is that

it has never been so bad for many years. The slackness of the general trade of the city naturally prevented the Corporation launching into new schemes of improvement. Work on hand was of course carried on, and much of it completed during the past twelve months; the streets were renewed where necessary, but little work of any magnitude was started. Private work has also been scarce, while public bodies have had to husband their resources as far as possible owing to the lack of money in the city. Bad as matters have been during the past twelve months it is impossible to offer the reassuring prospect of an improvement in the Spring. In truth there is no appearance of better times for the building trades in Dundee. The only consolation is that in some of the neighbouring towns a better state of affairs prevails.

Edinburgh.

During 1903 there has been a considerable increase in the value of the work passed through the Dean of Guild Court as compared with 1902, notwithstanding that the building industry has not shown much increased activity. The reason is in a great measure due to the fact that several of the large public buildings recently passed, involving large monetary value, have not got sufficiently under way to create any noticeable stir. Since the completion of the large fever hospital at Colinton Mains, which was opened by the King in the summer, a number of men have been thrown on the list of the unemployed. In the early Spring of this year it is expected that a marked change will take place for the better, and that both skilled artisans and the labouring classes will find work to do. The number of warrants granted during the year reached a total of 785, including 897 tenement houses, the whole work representing an approximate value of £825,584. The approximate value of the Dean of Guild Court work during the year 1902 is £758,259, showing an increase in favour of 1903 of £67,325, as compared with the preceding year.

Glasgow.

Trade has been fairly steady. The most prominent work begun during the year was undoubtedly the building of the Technical College. The building is now further forward than it was expected to be. No fewer than 400 men are employed daily on the site, while over 200 are working in the contractors' stoneyards preparing the building stone. The third storey has been passed, and by February the roof will be commenced. The contract money being paid weekly is £1,500, or an average of more than £6,000 a month.

Leith.

In his report on the building trade of Leith in 1903, Mr. Finlay, burgh surveyor, states that, contrary to expectation, there has been a very considerable amount of work in hand throughout the year. Fifty-eight warrants were granted by the Dean of Guild Court, as against seventy six in 1902, and the total value of the building for which warrants were given was about £268,000. A large sum has been expended on new warehouses during the year. Mr. Finlay states that, judging by the amount of tenement property being erected in the burgh, there is evidently a great demand for houses of this class—particularly for three- and four-roomed houses. There also appears to be a great demand for self-contained houses and villas. On the whole, the year is said to have been an average one as regards the amount of building undertaken, but there are indications that the coming year will be a quiet one.

Stonehaven.

The building trade for 1903 has not been in such a flourishing condition as of late years. Still, there has been a considerable amount of work, and the employers have been able to keep their usual number of

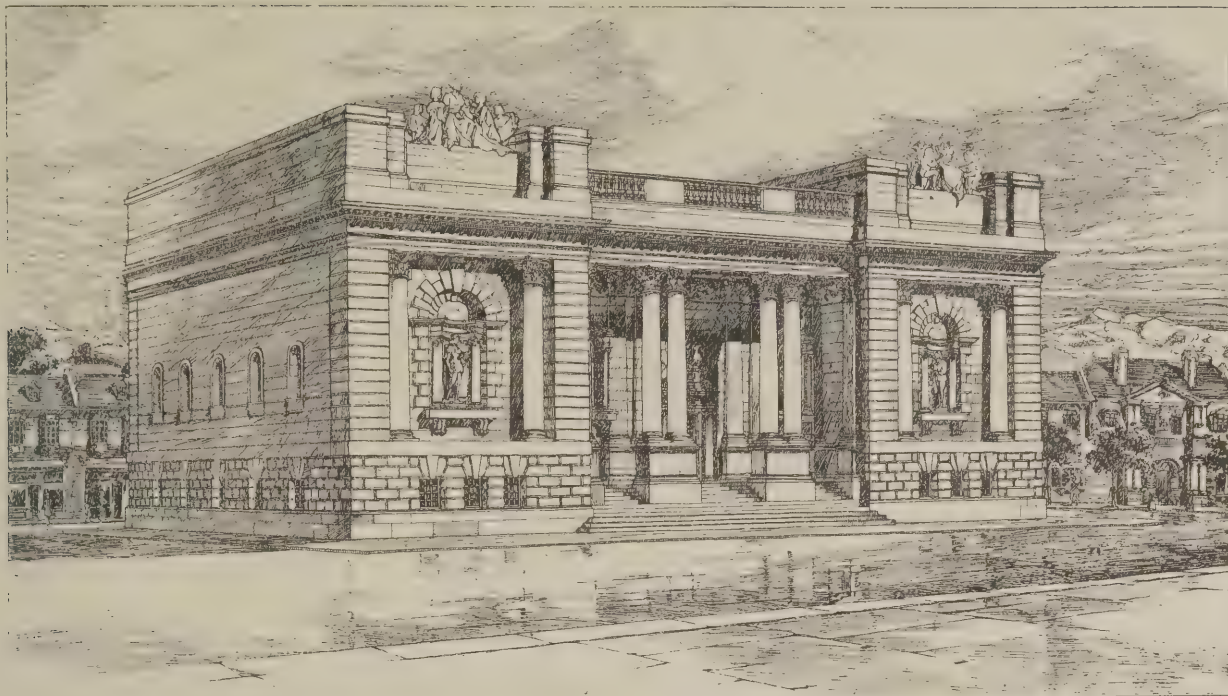
men engaged for the greater part of the year. During the year the Town Council have carried out considerable extensions to the water and drainage system, and have also made large extensions to the concrete pavements, so that, on the whole, work in the building and kindred trades may be said to have been good up till now; but the outlook for the present year does not seem to be very bright at present.

NEGLECTED ESSEX.

IN the issue of THE BUILDERS' JOURNAL for February 25th, 1903, some particulars were published about the church of White Roding in Essex, with accompanying illustrations by Mr. Sydney Newcombe. That part of Essex comprehended by the name of "The Rodings" is perhaps as little known to the ordinary tourist as any of the county. It would seem indeed that it has been the special fate of Essex, full as it undoubtedly is of the most interesting architectural remains of all periods from the time of the Roman occupation of Britain, to be consistently overlooked by the topographical writers of the older times as much as by architects of our own day. Yet there is hardly a parish that has not something to show well worthy of careful examination—it may be a church, one or more mediæval manor-houses of timber or brick construction, or the usual farms and cottages, all most typical of the district. To an architect, perhaps, the most interesting matter for observation is the struggle that has all along taken place to provide suitable durable building material; there is not, nor has there ever been, any stone obtained by quarrying. The soil is mostly the "London clay," varied by occasional outcrops of chalk. The greater part of the country was also, until well on into mediæval times, covered by the great Royal Forest of Essex—the splendid remains of which are yet to be seen in Epping Forest and many other places. It follows, therefore, that with such limited means one would expect to find, in the older buildings at least—before the means of communication became well developed and the primitive tracks and forest paths became roads—that each would develop an individuality dependent on the immediate character of the surrounding neighbourhood. There was in the first case a plentiful supply of remains of Roman date. Essex was, comparatively speaking, well provided with Roman camps and towns, and numerous villas and houses, the remains of which have been found. From these bricks could be obtained. Then in many parts the chalk furnished a supply of material for the interior of the walls, and sometimes even for arcades and arches. The accompanying flints were used for facing purposes, without being dressed, the rounded faces placed outwards.

If the builders were fortunate in being situated near one of the great Roman roads, adjoining a navigable river, and not too far inland from the coast, there was the possibility in Norman times of obtaining a supply of workable stone from Caen, and later from the Kentish ragstone and the Surrey soft greenstone quarries; and later still the revival of brickmaking in Essex (of which revival the thirteenth-century arcades at Coggeshall Abbey, near Colchester, claim to be the earliest mediæval brickwork in the country) which has produced for us the splendid series of red-brick towers in the central and northern portions of the county; and at the same time the growing knowledge of the use of timber for other purposes than roofs and coverings, beginning in the fourteenth century, make a systematic study of all its remains one of peculiar interest.

ERNEST GODMAN.



DESIGN FOR A PICTURE GALLERY, BY ALFRED C. BOSSOM.

ACTON TOWN HALL COMPETITION.

THE seven sets of designs submitted for new public offices and town hall at Acton were on exhibition last week at the Priory Schools, Acton Lane. The site is a somewhat irregular one, having frontages to High Street and Winchester Street, the former being a noisy street, so that it was suggested the town hall should be on the other front. The accepted design is by Mr. W. G. Hunt, of Kensington. In this the main entrance is at the corner of the site, and the town hall is placed on the first floor on the High Street front, a position where the noise during a speech or a song might be troublesome. The central position on the Winchester Street side is devoted to the town clerk's office. The planning in general is good, but not so good as in one other design shown; the elevations are very commonplace and restless, the detail being too profuse. Design "E," by Messrs. Lanchester, Stewart & Rickards, has a very good plan and a pleasing elevation. Design "D," by Messrs. Russell & Cooper, possesses no special merit. Design "A," by Mr. Hare, is well planned and shows a very pleasing treatment of the main entrance and tower above; but we do not see any supper-room in connection with the dancing hall. Design "F," by Mr. Mallows, also has a well-treated tower. Design "C," by Mr. Maurice B. Adams, shows very poor elevations. Design "G," by Messrs. Ardron & Dawson, is the least well planned of all sent in, some of the rooms being very inadequately lighted. The estimated costs of the respective designs are:—A, £51,553; B (accepted), £52,946; C, £77,471; D, £59,881; E, £53,855; F, £84,688; G, £57,626. The site is certainly an awkward one, but not one of the designs strikes us as particularly successful. In every case the competitors' remarks were hung with the drawings, but no copy of the conditions was provided for reference. Each competitor receives £50. Mr. Macvicar Anderson was the assessor.

Acton School Competition.

In the same hall six sets of designs for a county school for boys, to be erected at Acton, were exhibited. These were specifically invited. The first-premiated design, by Mr. A. H. Tiltman, of London, is undoubtedly the best. It has a very straightforward plan,

with classrooms arranged around a central assembly hall; the elevations, too, are pleasing, and the school stands well together. The second-premiated design, by Mr. W. Pyewell, is more spread out, being somewhat similar in its general arrangement to the third-premiated design, which is by Messrs. Giles, Gough & Trollope. The other designs were by Mr. Felix Clay, Mr. Osborne Smith and Mr. Maurice B. Adams. Mr. Leonard Stokes was the assessor.

Views and Reviews.

The Fire Exhibition.

A limited edition of 500 copies of the official report on the International Fire Exhibition held at Earl's Court last year has been issued by the British Fire Prevention Committee (1, Waterloo Place, Pall Mall), price 15s. nett. It is a well-printed and well-illustrated book of about 350 pages, and though more especially intended as a reference work for those primarily interested in the exhibition than as a book of general reference for the professional man or fire-brigade officer, these latter will find it a very useful record of the historical and international trade exhibits: in fact, as Mr. Edwin O. Sachs observes, the particulars of the loan collection serve as an outline to the history of fire-extinguishing during the last three centuries. The full official report of the Fire Congress held last July in connection with the exhibition has already been published, and the two books are supplementary to one another.

A Guide to the Housing Acts.

As set forth in the preface, this little book is intended for the use of local authorities, councillors, surveyors and others engaged in carrying out the administration of the Housing Acts. It is systematically compiled and, having a good index, a list of the cases cited, and italicised cross-heads, it is very easy of reference, the benefits of which cannot be overestimated when such complicated Acts as those dealing with housing are concerned. The effect of the recent Act (3 Edward VII. c. 39) is embodied in the book, and the text of it also appears with the other Acts in an appendix. The need for a revision of the law governing this problem is no more strikingly illustrated than in relation to improvement schemes. Local

authorities can either resolve to make an improvement scheme under Part I. or a reconstruction scheme under Part II.—a distinction without a difference—and in London, as the County Council are the authority for an improvement scheme and the borough councils are the authorities for a reconstruction scheme, constant friction arises as to whether a scheme should be labelled by one or the other, and an ingenious procedure is devised by which each authority endeavours to shift the burden on to the other.

"A Guide to the Housing Acts," with appendices containing the statutes affecting housing, 1882-1903, together with the forms and circulars of the L.G.B. By Arthur P. Poley, B.A., Barrister-at-law. London: Eyre & Spottiswoode, East Harding Street, E.C., price 3s. 6d.

Lubricants.

This is an excellent book on oils and lubrication. The first few chapters deal with friction from a mathematical point of view and set forth in a very lucid manner the tests made by various investigators to determine the co-efficients of sliding and fluid friction. Mr. Beauchamp Tower's experiments with an oil-bath bearing are especially interesting, and very clearly show the value of profuse lubrication. For each kind of machine there is an oil best adapted to its needs, and it is most important to use that oil: thus, it would be useless to employ for a gas-engine cylinder an oil which evaporated at a comparatively low temperature. All these points are dealt with by the author, both from a theoretical and a practical standpoint: indeed, everything is so carefully explained that we are surprised to see, on pp. 76 and 83, references to letters which do not appear on the illustrations. The book is a reprint, with rearrangement and additions, of a series of articles written for a technical journal, and will be found of considerable value by machinery users.

"Friction and its Reduction," by G. U. Wheeler, A.M.I.C.E. London: Whittaker & Co., Paternoster Square, E.C., price 3s. nett.

A Handy Book of Lettering.

This is a new issue of the book of lettering which Mr. Thorp issued some time ago, and a very much improved one as regards its size and get-up. Many of the alphabets look stronger, but we are still sorry to see among the "Ornamental" Nos. 1, 2, 3, 4, 5, 11, 15 and 19. Mr. Thorp, in a prefatory note, says that the compilation is intended

to furnish the draughtsman with specimens of most of the styles of lettering employed in architectural, engineering and other drawings; but, in spite of this, we think he would do well to omit the "Ornamental" alphabets named, as they are a blemish in this very handy book of lettering.

"Lettering for Architects, Engineers, &c.," compiled by John B. Thorp. The London Drawing and Tracing Office, 98, Gray's Inn Road, W.C.

The Drainage of Town and Country Houses.

This is an enlarged and corrected edition of the author's previous work on "House Drainage," designed mainly for students' use and written within certain limits of space to avoid confusing the beginner's mind. As such it is to be very highly commended. Not only is the text particularly clear and explicit, but the accompanying 93 diagrams in good bold line are excellent, and exactly what are needed. We have not for some time past seen a text-book so good both as to its contents and its appearance.

"The Drainage of Town and Country Houses; a practical account of modern sanitary arrangements and fittings," by G. A. T. Middleton, A.R.I.B.A. London: B. T. Batsford, 94, High Holborn, price 4s. 6d. nett.

Keystones.

The Society of Architects' new telephone number is 1852 Holborn.

Change of Address.—Mr. George O. Scorer, A.R.I.B.A., has moved to 22, Surrey Street, Strand, W.C.

As a Memorial to the late Mr. F. C. Penrose a library hall is proposed to be added to the building of the British School at Athens.

New Law Courts at Hong Kong are being built from designs by Messrs. Aston Webb and E. Ingress Bell, under the direction of Mr. H. G. Fisher, A.R.I.B.A., of the Public Works Department, Hong Kong.

Mr. George Frampton, R.A., has just completed the model of a St. George which will rank among the best of his imaginative works. The statue, which is to be executed in bronze as a memorial to the old Radley boys who fell in the South African War, is about 5ft. high.

Competition for Brighton and Hove Hospital for Women.—Mr. Horace R. Appelbee, of 15, Great James Street, Bedford Row, London, W.C., writes: "So many of the competitors have written to me on the subject of Mr. Hine's award (and not one in its favour) that I should like to ask these competitors who have not written to send me their names and addresses, so that I may communicate with them."

Plympton Grammar School, "a remarkable instance not only of the survival of pointed architecture in the seventeenth century but of an original and clever treatment of the style, almost reminiscent of Italian Gothic," is about to be disestablished, and it is feared the building will be demolished. The school is raised on a flat-ceiled cloister enclosed by a graceful colonnade. Its walls are banded externally with alternate courses of granite and dark limestone.

The Langside Public Halls, Glasgow, were formally opened on December 23rd. The building used to form the chief office in Glasgow of the National Bank of Scotland. It was removed from its former site in Queen Street, and has been re-erected at the corner of Langside Avenue and Pollokshaws Road. Outwardly the features of the old Bank building, of which Mr. John Gibson was the architect, have been preserved. The work was undertaken by Mr. A. B. MacDonald, the city engineer, and carried out by Messrs. P. & W. Anderson.

A Booklet on Cold Greenhouses and Frames has just been issued by Messrs. Dawbarn & Ward, 6, Farringdon Avenue, E.C., price 6d. nett (post free 7d.).

Public Lunatic Asylum Construction.—Mr. George H. Bibby is now contributing a series of articles on this subject to the "Local Government Journal."

"Some Difficulties of Fire Insurance."—This pamphlet will be sent post-free on application to Mr. W. H. Eady, M.A., of Enfield, N., who is interested in combating what he considers to be unfair conditions in the insurance policies of the Fire Offices.

A Little Norman Church in the parish of Milton Abbey, known as Liscombe Chapel, is being used as a bakehouse and loghouse, and the small monastic house adjoining is converted into a labourer's cottage. The matter has been referred to the Society for the Protection of Ancient Buildings.

A New Infants' School at Devonport, in Ker Street, was opened last week. It provides accommodation for 200 children, and contains one large schoolroom and three classrooms, two of which can be thrown into one. Messrs. Hine & Odgers, of Plymouth, were the architects, and Messrs. A. R. Lethbridge & Son, of Plymouth, the contractors.

At St. John's Church, Herne Bay, the Archbishop of Canterbury recently consecrated a new chancel, side chapel, vestries and organ-chamber. The work is in the Decorated style and of Kentish rag with Bath stone dressings; the east windows of chancel and chapel have been filled with stained glass. Mr. A. S. Ingleton, of Herne Bay, was the builder. The architect was Mr. William H. James, of the firm of Messrs. James & Laycock, of Bloomsbury Place, W.C.

New Pulpit in Bristol Cathedral.—The wooden pulpit in the nave of Bristol Cathedral has been removed from the south to the north side of the church, to make way for one of stone and marble, designed by Mr. G. F. Bodley, R.A. The pulpit is supported by a central shaft surrounded by smaller columns, and is entered by a staircase of stone, the sides of which are decorated by quatrefoil carvings. It was used for the first time on Christmas Day. The cost will be about £1,000.

The Parish Church of Stoke Damerel, one of the oldest ecclesiastical buildings in South Devonshire, has long been in a state of decrepitude, which rendered the erection of a new building to take its place absolutely necessary. Recently a portion of the new church, comprising the morning chapel and crypt, was dedicated by the Bishop of Exeter. When completed the new building, which it is proposed to erect at a cost of £20,000, exclusive of the tower, will accommodate 1,400 worshippers. The architect is Mr. W. D. Caröe, M.A., and the work is being carried out by Messrs. William Dart & Son, of Crediton, under the supervision of Mr. Bolwell as clerk of works.

A new Church at Ilfracombe has been erected from designs by Mr. G. H. Fellowes-Prynne at a cost of about £6,500. The style is Late Decorated or fourteenth-century style. The chapel, clergy vestry, west porch entrance and tower will be added when another £1,500 are forthcoming, and the church will then accommodate a congregation of 610 persons, with a choir for 40. It is built entirely of stone, with pink limestone outside and Cosham stone quoins from Ipplepen, and a red sandstone dado with grey stone above (from Combemartin and Barnstaple Road quarries). The spiral fluted columns supporting the arcade arches are of solid Cosham stone, slate doweled together. In the interior the grey stone has been pointed with red cement and the red stone with grey cement. The roof is of red tiles.

Competition for Free Library, Public Offices and Assembly Hall, Ilkley.—The time for sending in designs has been extended to March 1st, and the time for replying to enquiries extended to January 31st. The word "quantities" has been struck out of clause 28 (1) of the conditions, and the following words inserted at end of clause: "The Council will pay an additional 2 per cent. for preparation of quantities, but reserve the right to employ the selected architect or engage a quantity surveyor for this purpose."

The Exeter Cathedral Glass.—The new west window of Exeter Cathedral, which replaces Peckitt's, is approaching completion. Mr. G. F. Bodley, R.A., is the architect and Messrs. Burlison & Grylls are the glass makers. The old tracery was in a very much decayed condition, though, fortunately, part of it was sound at the core. Whatever could be kept in place has been so kept, and all new work, except where bonding was necessary, has been built on to and solidly attached to the sound work behind it.

Dundee Institute of Architecture, Science and Art.—A special meeting was recently held to consider an advertisement by a trade association in Dundee, which appeared in the local newspapers, asking architects to tender for the preparation of plans of a number of public-houses in the town in accordance with the Licensing (Scotland) Act, 1903. The meeting felt that if architects tendered they would entirely lower the status of the profession, and that the appearance of such an advertisement was certainly a plea for registration.

Builders' Notes.

Messrs. E. H. Shorland & Brother, of Manchester, have just supplied their double-fronted patent Manchester stoves to the Carr Gate Isolation Hospital, near Wakefield.

Harrow Hill is threatened by the speculative builder. An area of about 27 acres close to the school will speedily be converted into building sites unless £80,000 can be procured to preserve it.

Labour in the Colonies.—In Canada the building trades continued busy throughout the year and skilled men had no difficulty in procuring work. In Australia there is no demand for labour. In New Zealand nearly all trades are well employed. In Natal and the Transvaal the supply of labour is more than sufficient, and in Cape Colony the labour market is overstocked owing to the large number of new arrivals; no one is allowed to land unless he has secured definite employment in the Colony and possesses £20 on arrival.

Electric Cranes for Builders.—The directors of the Building Trades Exchange, Edinburgh, last winter inaugurated a series of lectures on technical subjects of interest to those engaged in the building trades. These proved very successful, and are being continued this winter. The opening lecture was given recently by Mr. John Ritchie, engineer, the subject being "Electric Cranes and Lifting Appliances." The lecturer pointed out that to work a hand crane all day long the cost was at the rate of 5s. per horse-power per hour; whereas electric power was supplied from the Corporation mains at slightly under 1d. per horse-power per hour. An instance was given of an electric crane which lifted all the material for a large building at the west end of Edinburgh; the cost of current from the Corporation mains was only 4s. per week, whereas the cost of coal for a steam crane doing similar work was from 20s. to 25s. per week.

FOUNDATION-STONE LAYING.

Human and Animal Sacrifices.

MR. FRANK STEVENS recently delivered a lecture at Windsor on the origin of foundation-stone laying. He said that one particular ceremony was common to all stone-laying—the deposit in the hollow of the foundation-stone of a bottle or case containing the current coins of the realm, a list of the donors and of the governing body, together with notices of the newspapers of the day. To seek an explanation of such a ceremony, it was necessary to travel far afield in strange lands. Mr. Stevens described the custom of the Malayan Dyaks of Borneo, continued till recently, which consisted in burying a slave girl alive beneath the centre pole that was to support the erection. This was “animism,” representing a conviction that every stick, stone, river, tree, cloud, was alive. The primary idea of the sacrifice was to ensure stability to the building. At Dahomey King Dako built his palace on the body of his favourite slave Danh. “Dahomey” actually meant “on the body of Danh.” In Polynesia the central pillar of one of the temples at Maeva was planted on the body of a human sacrifice. A seventeenth-century account of Japan mentions that walls used to be built upon the bodies of slaves, who offered themselves for this purpose and lay down in the trenches. In Siam, when a new city gate was being built, it was formerly the custom for officers to lie in wait to seize the first four strangers who passed that way. These were placed beneath the gate-posts as “guardian angels.” In Burmah the same custom obtained, “spirit watchers” being placed under the gates of Mandalay. From these and other instances, from Asia, Africa and Europe, it was abundantly evident that the practice of laying human foundations was continued to a very recent date.

As to the custom in our own islands, Mr. Stevens said that two only of the Round Towers in Ireland had been examined, but under each of them human skeletons were discovered. He quoted many other instances of skeletons discovered beneath the foundations and in the walls of churches and other buildings in many places in England.

He then traced the progress from human sacrifice to animal sacrifice. In Denmark it was the custom to build in a lamb under the altar, so that the church might stand; and in ordinary houses swine and fowls were buried alive. The living animal was replaced later by that which represented life. It was commonly reported that the city of Naples was built upon an egg; and there were two well-authenticated cases from Germany where the egg had been used as a foundation sacrifice, one being the church of Kirchspiels, at Iserlohn.

Statues and figures of men as substitutes for originals had often been found in foundations—in Rome particularly. In London, some years ago, when the interior of a bastion of London Wall was being examined, the figure of a Cohortal Signifier—the colour-sergeant of the period—was brought to light. This figure, taken from the foundations, was now in the Guildhall Museum.

Candles were a very frequent substitute; the flame of a candle was an old symbol of life, just as a reversed torch was a symbol of death. The votive candlesticks of the Roman Church to-day were too well known to need description. A few years ago a candle was buried in the foundations of the tower of St. Osyth's Priory, Essex.

In Greece there was a superstition that whoever passed by while a foundation-stone was being laid would die before the year was out. To avert this the builders killed a lamb or a cock upon the stone.

Coming to the ever-prevalent idea of substitution, it was found that carpenters or masons frequently called out the name of some bird or beast, firmly believing that it would consume away and perish if they did so. This led to great civility being offered to carpenters and masons, for they might call out the name of a person, who would, in like manner, perish.

A far more curious custom existed in Eastern Europe than any yet mentioned, and that was the attempt made by masons to catch the shadow of a passing stranger and lay the foundation-stone upon it. The belief was that the person whose shadow had been thus immured would die in forty days. The explanation of this custom rested, of course, on the very general belief that the life, the shadow and the soul were all more or less one. There was also a custom of burying a ray of sunlight in a similar way.

SIX POINTS ON SANITATION.

IN a paper on “Sanitary Law” which he read before the last meeting of the Institute of Sanitary Engineers, Mr. H. Harcourt Verden (of Messrs. Davies & Verden, solicitors) gave the following six important points, which are practically an outline of sanitation well summarized:—

1. The district council is required to cause to be made such sewers as are necessary for effectually draining their particular district.

2. The owner or occupier is entitled to connect with any sewer on condition that he gives notice and complies with the council's regulations, and subject to control by the council's appointed officer.

3. Every owner without the district has the same rights, but subject to such conditions as may be agreed upon or settled by law and arbitration.

4. If a house has no sufficient drain, the occupier may be required to provide one, and to discharge into the sewer if there is one within 100ft., otherwise into a cesspool, as the council may direct.

5. New houses in urban districts must have sufficient drainage as the council requires.

6. In an urban district no building is to be newly erected over a sewer without first obtaining the council's consent.

Bankruptcies.

[Abbreviations: R.O.—receiving order; P.E.—public examination; C.C.—county court; O.R.—official receiver Adj.—Adjudication.]

DURING THE WEEK ending Jan. 1st eleven failures in the building and timber trades in England and Wales were gazetted.

A. D. BATSON, builder, Luton. R.O. Dec. 22nd.

F. MITCHELL, builder, Paignton. R.O. Dec. 21st.

W. J. SHAW, builder, Liverpool. Adj. Dec. 21st.

BOFFER & REEVES, builders and contractors, Ashton-in-Makerfield. P.E., Wigan C.C., Jan. 14th, at 10.45.

W. COLLINS, stone merchant, Hove Edge, Brighouse. P.E., Halifax C.C., Jan. 11th, at 2.

E. FISTLETHWAITE, builder, Ingleton. R.O. Dec. 23rd.

R. H. Mew (trading as H. Christmas & Co.), contractor, Brighton. R.O. Dec. 21st. P.E. Brighton C.C., Jan. 28th, at 11.

S. WORSLEY, painter and decorator, Brighton. R.O. Dec. 22nd. First meeting, O.R.'s, Jan. 7th, at 3. P.E., Brighton C.C., same day, at 11.

BANKS' FIREPROOF CONSTRUCTION SYNDICATE, LTD.—Under a winding-up order made against this company on Nov. 4th last the official receiver has issued a summary of the company's statement of affairs. He states that with the exception of the year ending April 30th, 1899, the business was carried on at a loss, which amounted at Dec. 31st, 1901, to £11,637. The loss appears to have arisen from accepting contracts at prices which allowed little or no margin of profit, and from bad debts, which amounted to nearly £3,000. The official receiver is liquidator of the company.

Failures during 1903.

During the past year there were 710 bankruptcies in the building and timber trades of the United Kingdom, as compared with 721 for 1902, 671 for 1901, 875 for 1900 and 748 for 1899.

THE MOST INTERESTING CHURCH IN NORFOLK.

THE restoration of the abbey church at Wymondham is being conservatively carried out. The history of the church dates back to 1107, when William D'Albini, who came over with the Conqueror and was rewarded for his services with the gift of Wymondham and other large possessions in Norfolk, pulled down the old Saxon church and founded the Benedictine priory of Wymondham as a cell to the great abbey of St. Alban, of which his brother was abbot.

The Norman church was dedicated to St. Mary the Virgin, and was a cruciform structure with central lantern tower containing bells, two towers at the west front, nave, choir, north and south transepts, north and south aisles to nave, and chapels.

The cloisters, domestic and other buildings of the priory (traces of which still remain) were very extensive. In 1390-1409 the lantern tower at the intersection of the transepts being decayed, the monks built the present octagon tower, thereby taking in three bays of the nave. 1410 was probably the date of the fine font (which suffered greatly at the hands of Oliver Cromwell's Puritans).

In 1432-1445 the present clearstory and the magnificent carved roof of the nave were built, and the north aisle widened, the roof of which is also very fine. Between 1445-1476 the two towers at the west front were pulled down, and the massive west tower built. The bells for the use of the parish church were hung in the latter year. In 1530 the abbey was dissolved and the monastic buildings demolished. The eastern gable of the chapter-house remains standing in the churchyard. It was between 1544 and 1560 that the parishioners obtained a grant of the south aisle from the Crown, and rebuilt it on a larger plan.

The plans for the present restoration were prepared by the late Mr. W. S. Hicks, of Newcastle, who had a very large experience in the restoration of parish churches throughout England, and he himself superintended the earlier part of the work. Since his death his plans have been carried on by his partner, Mr. H. C. Charlewood. The following is a summary of the proposed restoration work included in the scheme:—The roofs will be carefully repaired, the lead being recast and relaid, and every piece of the old carved and other timbers retained as far as possible. All the floors of the church will be relaid at their original levels, the walls and windows thoroughly repaired, the large west windows in the west tower and north aisle reopened, the seating improved, and proper lighting and warming apparatus provided. The east wall of the nave, which is at present entirely blank, will have a reredos of stone surmounted by a fresco of suitable design added. Below the sanctuary there will be carved oak choir and clergy stalls, and also a chancel organ. The grand arch dividing the west tower from the nave will be opened up by the removal of the modern gallery and partition. The organ, presented in 1793, will be rebuilt and enlarged, and will then be placed on a screen, already indicated in the west tower, under a new vaulted groined ceiling (the original corner fan-shaped springers being still in existence). The choir vestry will be built on old foundations, and a clergy vestry built in the base of the eastern or abbey tower, to preserve the ancient north and south doorways, as well as the doors from the sanctuary, which were bricked up and will be reopened. The ground around the church will be properly cleared away, and a trench laid so that no further injury by damp to the foundations may take place. The contractors engaged upon the work of restoring the church are Messrs. Rattee & Kett, of Cambridge. The estimated cost of the entire work is £25,000.

Complete List of Contracts Open.

DATE OF DELIVERY.		WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
BUILDING:				
Jan.	7	London, S.E.—Labour Room, &c.	Guardians	G. D. Stevenson, 13 and 14 Kinz Street, Cheapside, E.C.
"	8	Llandilo, Wales—Villa, &c.	Corporation	A. S. Williams, Architect, Llandilo
"	9	Kirkcaldy, Scotland—Extension of Shed		W. L. Macindoe, Town Clerk, Kirkcaldy.
"	9	Columbkille, Ireland—Church Repair and Alteration		Vicarage, Gowna, co. Cavan.
"	9	London, S.E.—Nurses' Additions	Metropolitan Asylums Board	J. W. Aldwinkle & Son, 20 Denman Street, London Bridge, S.E.
"	11	East Ham—Library	Urban District Council	A. H. Campbell, Engineer, Town Hall, East Ham.
"	11	Bury St. Edmunds—Alterations to Police Station	Standing Joint Committee	A. A. Hunt, 51 Abbeygate Street, Bury St. Edmunds.
"	11	Cambuslang, Scotland—Refuse-destroyer and Electric-Light Buildings.	Lanark County Council	W. L. Douglass, District Engineer, District Offices, Hamilton.
"	11	Cambuslang, Scotland—Chimney Stalk	Lanark District Committee	W. L. Douglass, District Engineer, District Offices, Hamilton.
"	11	London, S.W.—Cement	Wandsworth Borough Council	H. G. Hills, Town Clerk, Council House, Wandsworth, S.W.
"	11	Boston—Engine House and Attendant's House	Urban District Council	J. Rowell, Borough Offices, Market Place, Boston.
"	11	Dungannon Junction, Ireland—Cottage	Great Northern Railway Co.	W. H. Mills, Engineer-in-Chief, Amiens Street Terminus, Dublin.
"	11	Southend-on-Sea—Extension of Shed, &c.	Corporation	E. J. Elford, Borough Engineer, Southend-on-Sea.
"	12	Stockport—Offices	Cleansing Committee	J. Atkinson, Borough Surveyor, Stockport.
"	12	Fort William, Scotland—Alterations, &c., to Hotel	D. Rankin	L. & J. Falconer, Architects, Fort William.
"	12	Paddington—Extension of Workhouse	Guardians	F. J. Smith, Architect, Parliament Mansions, Victoria Street, S.W.
"	12	Padiham, Lancs—Retorts, &c.	Urban District Council	A. J. Jackson, Gas Engineer, Council Offices, Mill Street, Padiham.
"	12	Mortlake—Stabling, &c.	Barnes U.D.C.	G. B. Tones, Surveyor, Council Offices, High Street, Mortlake.
"	13	Naas, Ireland—Residence, &c.	Guardians	D. J. Purcell, Clerk, Board Room, Naas Workhouse.
"	13	London, S.W.—Additions to Hospital	Metropolitan Asylums Board	T. D. Mann, Secretary, Board's Offices, Embankment, E.C.
"	13	London, S.W.—Cottage	Metropolitan Asylums Board	T. D. Mann, Secretary, Board's Offices, Embankment, E.C.
"	13	London, S.E.—Cottage	Metropolitan Asylums Board	T. D. Mann, Secretary, Board's Offices, Embankment, E.C.
"	14	Coventry—Shop, &c.	Perseverance Co-op. Soc., Ltd.	Harrison & Hattrell, 23 Hertford Street, Coventry.
"	14	Glyn Ceiriog, Wales—Two Houses		T. Griffiths, Coedglyn Terrace, Glyn, Ruabon.
"	14	London, E.—Alterations to School	Guardians	J. M. Knight 35 Bancroft Road, Mile End Road, London, E.
"	18	Mountain Ash, Wales—Public Offices	Urban District Council	J. H. Phillips, Architect, Clive Chambers, Windsor Place, Cardiff.
"	18	London, S.E.—Lime, Cement, &c.	Camberwell Borough Council	W. Oxtoby, Borough Engineer, Town Hall, Camberwell, S.E.
"	19	Royal Albert Dock—Mercantile Marine Office	Commissioners of H.M. Works, &c.	Secretary, H.M. Office of Works, Storey's Gate, Westminster.
"	21	Trealaw, Rhondda Valley, Wales—Chapel		J. Thomas 83 Miskin Road, Trealaw.
"	23	Merthyr Tydfil—School	School Board	S. L. Smith, 51 High Street, Merthyr Tydfil.
"	24	East Ham—Restoration of School after Fire	Education Committee	R. L. Curtis, 120 London Wall, Moorgate Street, E.C.
"	27	Derby—Offices	Standing Joint Committee	J. S. Storey, County Surv., County Offices, St. Mary's Gate, Derby.
Feb.	1	Sunderland—Additions, &c., to Hall	Corporation	J. Eltringham 62 John Street, Sunderland.
ENGINEERING:				
Jan.	7	Edinburgh—Water Supply, &c., Works	Parish Council	A. Ferrier, Clerk, Parish Council Chambers, Edinburgh.
"	7	Bo'ness, Scotland—Electric Lighting	Town Council	Mr. Liddle, 28 Rutland Street, Edinburgh.
"	8	Calcutta—Disc Water Meters	Corporation	Assistant Engineer, Corporation Water Works, 3 Municipal Office Street, Calcutta.
"	8	Carshalton, Surrey—Hot-water Apparatus	Metropolitan Asylums Board	T. D. Mann, Clerk, Board's Offices, Embankment, E.C.
"	9	Kettering—Electricity Meters	Urban District Council	Kennedy & Jenkin, 17 Victoria Street, Westminster, S.W.
"	9	Swinton, Lancs—Sewage Screening Machine	Urban District Committee	H. Entwistle, Council Offices, Swinton.
"	11	Manchester—Laying Telephones	Paving, Sewering and Highways Committee.	City Surveyor, Town Hall, Manchester.
"	11	Clay Cross, near Chesterfield—Well Sinking	Urban District Council	W. H. Radford, Albion Chambers, King Street, Nottingham.
"	11	Clay Cross, near Chesterfield—Pipe Laying	Urban District Council	W. H. Radford, Albion Chambers, King Street, Nottingham.
"	11	Clay Cross, near Chesterfield—Borehole	Urban District Council	W. H. Radford, Albion Chambers, King Street, Nottingham.
"	11	Greygill and Limerig, Scotland—Reservoirs	Eastern District Committee	Warren & Stuart, 94, Hope Street, Glasgow.
"	11	Clacton-on-Sea—Gasmeters	Urban District Council	S. Francis, Engineer, Town Hall, Clacton-on-Sea.
"	11	London, S.E.—Repairing front of Wharf	Metropolitan Asylums Board	Secretary, Metropolitan Asylums Board, Embankment, E.C.
"	11	Glasgow—Generating Plant	Corporation	W. A. Chamen, 75 Waterloo Street, Glasgow.
"	12	Birmingham—Sewage Purification Works	Tame and Rea District Drainage Board.	J. D. Watson, Engineer, Tyburn, near Birmingham.
"	12	Sydney, New South Wales—Electrical Plant and Machinery	Municipal Council	Preece & Cardew, 8 Queen Anne's Gate, Westminster, S.W.
"	12	London, W.—Two Iron Fire-Escape Staircases	Paddington Guardians	E. H. Sim, 8 Craig's Court, Charing Cross, W.C.
"	12	Bradley, Bilston, Staffs—Sewage Tanks, &c.	S. Staffs. Small-Pox Hosp. Bd.	G. Green, Town Hall, Wolverhampton.
"	13	London, W.—Electric Wiring, &c.	Guardians	Burstall & Monkhouse, 14, Old Queen Street, Westminster.
"	13	Haywards Heath, Sussex—Well Pumps	Cuckfield R.D.C.	D. Rankine, Engineer, Waterworks Offices, Haywards Heath.
"	15	Spain—Bridge over River Tuerto	Ministry of Public Works	Commercial Intelligence Branch, B. of Trade, 50 Parliament St. S.W.
"	16	Egremont, Cheshire—Cables	Wallasey U.D.C.	J. A. Crowther, Electric Supply Works, Sea View Road, Liscard.
"	18	Erith, Kent—Electrical Plant	Urban District Council	C. H. Foy, Clerk, Council Offices, Erith.
"	18	Belfast—Lamps and Fittings	Harbour Commissioners	G. F. L. Giles, Harbour Engineer, Belfast.
"	19	Rotherhithe and Radcliff—Footway Tunnel	London County Council	Engineer's Department, County Hall, Spring Gardens, S.W.
"	19	Greenwich—Pumps	London County Council	County Hall, Spring Gardens, S.W.
"	19	London—Tunnel	London County Council	Engineer's Department, County Hall, Spring Gardens, S.W.
"	22	Ennisceorthy, Ireland—Electrical Plant	Dist. Lunatic Asylum Committee	H. T. Harris, 30 Parliament Street, Dublin.
"	22	Walthamstow—Bridge Works	Urban District Council	G. W. Holmes, Engineer, Town Hall, Walthamstow.
"	25	Edinburgh—Gas Propelling Machinery	Corporation	W. R. Herring, Chief Engineer, New Street Works, Edinburgh.
"	26	Walthamstow—Corrugated Iron Shed, &c.	Urban District Council	G. W. Holmes, Engineer, Town Hall, Walthamstow.
"	28	Oldbury—Pumping Station	Urban District Council	J. T. Bayrs, 39 Corporation Street, Birmingham.
"	30	Devonport—Gasworks	Corporation	Stevenson & Burstall, 33 Parliament Street, Westminster.
"	31	Palermo—Steam Flour Mill, &c.	Syndic	Commercial Intelligence Branch, Board of Trade, 50 Parliament Street, S.W.
Feb.	1	Cairo—Three Road Bridges over Nile	Ministry of Public Works	Commercial Intelligence Branch, Board of Trade, 50 Parliament Street, S.W.
Mar.	17	Christchurch, New Zealand—Electrical Tramways		Agent-General for New Zealand, Victoria Street, London.
FURNITURE:				
Jan.	7	Chatham—Furnishing, &c.	Joint Hospital Board	H. P. Mann, 41, High Street, Chatham.
"	25	Leeds—Furniture	Sanitary Committee	W. J. Jeeves, Town Clerk, Leeds.
IRON AND STEEL:				
Jan.	7	Earlsheaton, Dewsbury—Pipes	Soothill Nether U.D.C.	J. H. Ward, Surveyor, Earlsheaton, Dewsbury.
"	11	Clay Cross, near Chesterfield—Pipes	Urban District Council	W. H. Radford, Albion Chambers, King Street, Nottingham.
"	11	London, S.W.—Iron Bars, &c.	Wandsworth Borough Council	H. G. Hills, Town Clerk, Council House, Wandsworth, S.W.
"	11	Glasgow—Angle Racks	Corporation	W. A. Chamen, 75 Waterloo Street, Glasgow.
"	12	Padiham, Lancs—Mouthpieces, &c.	Urban District Council	A. J. Jackson, Gas Engineer, Council Offices, Mill Street, Padiham.
"	13	Amsterdam—Ironwork, &c.	Netherlands Minister for Colonies	Mart. Nijhoff, 18 Nobelstraat, The Hague.
"	18	London, S.E.—Stores	Camberwell Borough Council	W. Oxtoby, Borough Engineer, Town Hall, Camberwell, S.E.
"	20	Christiania—Rails, &c.		Commercial Intelligence Branch, Board of Trade, 50 Parliament Street, S.W.
"	20	Swinton—Sewer Ventilators	Urban District Council	H. Entwistle, Council Offices, Swinton.
PAINTING AND PLUMBING:				
Jan.	11	London, S.W.—Painter's Materials	Wandsworth Borough Council	H. G. Hills, Town Clerk, Council House, Wandsworth.
ROADS AND CARTAGE:				
Jan.	7	Featherstone, Yorks—Kerb, &c.	Urban District Council	F. B. Rothera, Council Offices, Featherstone.
"	11	London, S.W.—York Paving and Granite Kerb	Wandsworth Borough Council	H. G. Hills, Town Clerk, Council House, Wandsworth, S.W.
"	11	Dartford—Making-up Private Streets	Rural District Council	W. Harston, 8 Hythe Street, Dartford.
"	12	Wilkesden—Road-making	District Council	O. C. Robson, Engineer, Public Offices, Dyne Road, Kilburn, N.W.
"	12	Bromley—Paving, &c.	Borough Council	F. H. Norman, Town Clerk, Municipal Offices, Bromley, Kent.
"	13	Kingston-upon-Thames—Granite	Corporation	Borough Surveyor, Clattern House, Kingston-upon-Thames.
"	13	London, S.E.—Road-making Works	Metropolitan Asylums Board	T. D. Mann, Secretary, Board's Offices, Embankment, E.C.
"	16	Sleaford—Granite and Slag	Rural District Council	E. Clements, 71 Southgate, Sleaford.
"	18	London, S.E.—Granite, &c.	Camberwell Borough Council	W. Oxtoby, Borough Engineer, Town Hall, Camberwell, S.E.
"	10	Rotherhithe and Radcliff—Carriageway	London County Council	Engineer's Department, County Hall, Spring Gardens, S.W.
"	23	Hailsham, Sussex—Materials, &c.	Rural District Council	E. Catt, 17 London Road, Hailsham.
"	24	Midhurst, Sussex—Granite, &c.	Rural District Council	A. G. Gibbs, District Surveyor, Council Offices, Midhurst.

Complete List of Contracts Open—continued

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
SANITARY:			
Jan. 7	Uxbridge—Extensions of Sewers	Rural District Council	J. F. Stow, Surveyor, Corn Exchange, Uxbridge.
" 9	Tunbridge Wells—Sewer, &c.	Corporation	J. Cave, 10 Calverley Parade, Tunbridge Wells.
" 11	Cockermouth—Sewerage Works	Guardians	W. G. Scott & Co., Architects, Workington.
" 11	London, S.W.—Stoneware Pipes, &c.	Wandsworth Borough Council ..	H. G. Hills, Town Clerk, Council House, Wandsworth, S.W.
" 11	Hambleton, Guildford—Scavenging	Rural District Council	F. Smallpiece, 138 High Street, Guildford.
" 13	Tooting, S.W.—Drainage Works	Metropolitan Asylums Board ..	A. & C. Harston, 15 Leadenhall Street, E.C.
" 18	Blakedown, Worcs.—Sewerage Works	Bromsgrove R.D.C.	H. W. Taylor, Engrn., St. Nicholas Chambers, Newcastle-on-Tyne.
" 18	Lower Hagley, Worcs.—Sewerage Works	Bromsgrove R.D.C.	H. W. Taylor, Engrn., St. Nicholas Chambers, Newcastle-on-Tyne.
" 19	London, S.E.—Stoneware Drain Pipes, &c.	Camberwell Borough Council ..	W. Oxtoby, Borough Engineer, Town Hall, Camberwell, S.E.
" 19	Bolton—Emptying Ashpits (Two Contracts)	Corporation	Town Clerk, Town Hall, Bolton.
TIMBER:			
Jan. 11	London, S.W.—Timber	Wandsworth Borough Council ..	H. G. Hills, Town Clerk, Council House, Wandsworth, S.W.
" 15	Cape Town—Timber	Government Rly. Department ..	Railway Stores, Cape Town.
" 18	London, S.E.—Timber	Camberwell Borough Council ..	W. Oxtoby, Borough Engineer, Town Hall, Camberwell, S.E.

List of Competitions Open.

DATE OF DELIVERY.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	DEPOSIT REQUIRED FOR CONDITIONS, &c.	BY WHOM ADVERTISED.
Jan. 15	Windsor—Police and Fire-Brigade Stations	£26 5s.	£1.	E. A. Stickland, Borough Surveyor, Town Council Offices, Windsor.
" 20	Wakefield—Public Library	—	—	C. J. Hudson, Town Clerk, Town Hall, Wakefield.
" 31	Borstal, Rochester—Chancel, Organ Chamber, &c.	—	—	Borstal Vicarage, Rochester.
Mar. 1	Ilkley—Free Library &c.	£100, £50, £20.	£1 1s.	F. Hall, Clerk, Council Offices, Ilkley.
Feb. 1	Erdington—New Council House & Free Library	£50, £30, £20.	£1 1s.	H. H. Humphries, District Engineer, Public Hall, Erdington, Birmingham.
" 31	Sevenoaks—Public Library	—	—	H. J. Thompson, Clerk, Council Offices, Argyle Road, Sevenoaks.
Mar. 31	Vienna—Machinery to Lift Boats on Canal	100,000, 75,000 & 50,000 kronen.	—	Austro-Hungarian Consulate-General, 22 Laurence Pountney Lane, E.C.
No date	Torquay—Public Library	£52 10s., £31 10s.	—	F. S. Hex, Town Clerk, Town Hall, Torquay.

Current Market Prices

		£	s.	d.	£	s.	d.
FORAGE.							
Beans	per qr.	1	14	0	2	0	0
Clover, best	per load	4	5	0	4	10	0
Hay, good	do.	3	12	6	4	0	0
Sainfoin mixture	do.	3	15	0	4	5	0
Straw	do.	1	10	0	2	0	0

		£	s.	d.	£	s.	d.
OILS AND PAINTS.							
Castor Oil, French	per cwt.	1	0	5	—	—	—
Colza Oil, English	do.	1	3	6	—	—	—
Copperas	per ton	2	0	0	—	—	—
Lard Oil	per cwt.	2	15	0	2	17	0
Lead, white, ground, car-	do.	1	4	10	—	—	—
bonate	do.	1	0	4	—	—	—
Do. red	do.	0	17	12	—	—	—
Linseed Oil, barrels	per gal.	0	0	7	0	0	7
Petroleum, American	do.	0	0	5	0	0	7
Do. Russian	per barrel	0	8	0	—	—	—
Pitch	per cwt.	11	10	0	—	—	—
Shellac, orange	per ton	3	2	6	3	5	0
Soda, crystals	per cwt.	1	7	6	—	—	—
Tallow, Town	per barrel	1	2	0	—	—	—
Tar, Stockholm	per cwt.	1	13	10	—	—	—
Turpentine	per cwt.	1	13	10	—	—	—

		£	s.	d.	£	s.	d.
METALS.							
Copper, sheet, strong	per ton	71	0	0	—	—	—
Iron, Staffs, bar	do.	6	0	0	8	10	0
Do. Galvanised Corru-	do.	10	7	6	10	12	6
gated sheet	do.	11	7	6	—	—	—
Lead, pig, Soft Foreign	do.	11	7	6	—	—	—
Do. do. English common	do.	11	15	0	—	—	—
brands	do.	14	0	0	—	—	—
Do. sheet English 3lb. per	do.	15	0	0	—	—	—
sq. ft. and upwards	do.	15	0	0	—	—	—
Do. pipe	do.	9	5	0	—	—	—
Nails, cut clasp, 3in. to 6in.	do.	9	5	0	—	—	—
Do. floor brads	do.	9	5	0	—	—	—
Steel, Staffs, Girders and	do.	5	10	0	6	5	0
Angles	do.	6	0	0	6	5	0
Do. do. Mild bars	do.	125	17	6	126	7	6
Tin, Foreign	do.	129	0	0	131	0	0
Do. English ingots	do.	23	12	6	—	—	—
Zinc, sheets, Silesian	do.	23	10	0	—	—	—
Do. do. Vieille Montaigne	do.	21	7	6	21	15	0
Do. Spelter	do.	—	—	—	—	—	—

		£	s.	d.	£	s.	d.
TIMBER.							
SOFT WOODS.							
Fir, Dantzic and Memel	per load	1	13	0	3	0	0
Pine, Quebec, Yellow	do.	5	5	0	6	5	0
Do. Pitch	do.	2	11	0	2	16	0
Laths, log, Dantzic	per fath.	4	10	0	5	10	0
Do. Norrköping	per bundle	0	0	7	—	—	—
Deals, St. Petersburg, White, 3rd, 2x5 to 3x11	per stand.	6	15	0	—	—	—
Do. Kemi, Yellow, 1st	do.	12	0	0	—	—	—
Do. do. do. 2nd, 4x12	do.	9	10	0	—	—	—
Do. do. do. 2nd, 3x9	do.	11	0	0	—	—	—
Do. do. do. 3rd, 4x11	do.	6	5	0	—	—	—
Do. do. do. 3rd, 3x9	do.	8	0	0	—	—	—
Do. Svoka, Yellow, 3rd, 3x9	do.	12	0	0	—	—	—
Do. Archangel, Yellow, 2nd, 3x11	do.	17	10	0	—	—	—
Do. do. do. 3rd, 3x9	do.	13	5	0	—	—	—
Do. do. do. 4th, 3x9	do.	9	15	0	—	—	—
Do. do. White, 1st, 3x9	do.	11	10	0	—	—	—
Do. do. do. 2nd, 3x11	do.	10	15	0	—	—	—
Do. do. do. 3rd, 3x11	do.	8	15	0	—	—	—

		£	s.	d.	£	s.	d.
HARD WOODS.							
Ash, Quebec	per load	3	12	6	—	—	—
Birch, St. John, 3x8 to 15	do.	8	0	0	—	—	—
Box, Turkey	per ton	15	0	0	20	0	0
Cedar, Cuba	per ft. sup.	0	0	5	—	—	—
Do. Honduras	do.	0	0	4	—	—	—
Do. Tobasco	do.	0	0	3	—	—	—
Elm, Quebec	per load	4	2	6	—	—	—
Mahogany, Average Price for Cargo, Honduras	per ft. sup.	0	0	6	—	—	—
Do. African	do.	0	0	3	—	—	—
Do. St. Domingo	do.	0	0	3	—	—	—
Do. Cuba	do.	0	0	5	—	—	—
Do. Lagos	do.	0	0	3	—	—	—
Do. Benin	do.	0	0	3	—	—	—
Do. Tobasco	do.	0	0	3	—	—	—
Oak, Libau, Crown	per load	2	15	0	—	—	—
Wainscot logs	do.	3	7	0	—	—	—
Do. Fiume round logs	do.	4	10	0	—	—	—
Do. Quebec	do.	8	0	0	15	10	0
Teak, Rangoon, planks	do.	11	5	9	—	—	—
Do. do. logs	do.	12	5	5	—	—	—
Do. Indian planks	do.	6	10	0	8	0	0
Do. Moulmein logs	do.	—	—	—	—	—	—

Coming Events.

Wednesday, January 6.	
NORTHERN ARCHITECTURAL ASSOCIATION.—Students' Evening.	
ARCHITECTURAL ASSOCIATION (Discussion Section and Camera and Cycling Club joint Meeting).—Debate on "Sketching and Photography," at 7:30 p.m.	
Friday, January 8.	
ARCHITECTURAL ASSOCIATION.—Mr. Hugh Stannus, F.R.I.B.A., on "Egyptian Architecture," at 7:30 p.m.	
BIRMINGHAM ARCHITECTURAL ASSOCIATION.—Mr. J. A. Gutch on "Domestic Architecture from the Conquest."	

Saturday, January 9.

GLASGOW TECHNICAL COLLEGE SCIENTIFIC SOCIETY.—Alex. G. Strathern, M.I.M.E., on "The Manufacture of Weldless Chains," at 7:30 p.m.

Monday, January 11.

SURVEYORS' INSTITUTION.—Discussion on Mr. Herbert T. Scoble's paper on "Industrial Decentralization, an Important Factor in the Solution of the Housing Problem," at 8 p.m.

Tuesday, January 12.

ARCHITECTURAL ASSOCIATION OF IRELAND.—Mr. G. P. Sheridan on "An Architectural Ramble in the North of France," at 8 p.m.

INSTITUTION OF CIVIL ENGINEERS.—Mr. Alexander Millar, A.M.I.C.E., on "The Electrical Reconstruction of the South London Tramways on the Conduit System," at 8 p.m.

Wednesday, January 13.

NORTHERN ARCHITECTURAL ASSOCIATION.—Mr. T. J. Gueritte on "Reinforced Concrete and its Applications," at 7:30 p.m.

EDINBURGH ARCHITECTURAL ASSOCIATION.—Lantern Night at 8 p.m.

GLASGOW ARCHITECTURAL ASSOCIATION.—Prof. Beresford Pite, F.R.I.B.A., on "Architecture, Registered or Free," at 8 p.m.

SURVEYORS' INSTITUTION.—Students' Preliminary Examination.

Tenders.

Information from accredited sources should be sent to "The Editor" at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Addressed postcards on which lists of tenders may be stated will be sent post free on application to the Manager, BUILDERS' JOURNAL, 6, Great New Street, Fetter Lane, E.C.

Birmingham.—For the superstructure, internal finishings, &c., of the new university buildings at Bournbrook, Messrs. Aston Webb, R.A., and E. Ingress Bell, architects, 19, Queen Anne's Gate, S.W.:—

Leslie & Co., London	£214,751	0
McCormick & Sons, London	209,876	0
F. G. Minter, London	193,892	0
Moss & Sons, Loughborough	184,230	0
Parnell & Son, Rugby	183,360	0
Longley & Co., Crawley	182,779	0
Bowen & Sons	180,500	0
Willcock & Co., Wolverhampton	179,533	0
Barnesley & Sons	178,888	0
Smith & Pitts	177,400	0
Shillitoe & Son, Bury St. Edmunds	176,500	0
Gowing & Ingram	176,000	0
W. & J. Webb	175,937	0
Vickers & Son, Nottingham	175,630	0
Sapcote & Sons	173,071	0
Watt Brothers, West Hartlepool	170,881	11
Kerridge & Shaw, Cambridge	164,800	0
T. Rowbotham	151,827	0
* Amended and accepted. [Rest of Birmingham.]		

London, E.C.—For new premises, Fetter Lane, E.C., with two fire-resisting staircases. Drawings by Mr. C. Watkins, architect, Glebe House, Sherborne Lane E.C.:—

Colls & Sons	£10,890
Asbby & Horner	10,838
Lascelles & Co.	10,765
H. Lovatt	10,750
Patman & Fotheringham	10,273
W. Downs	10,233
J. Greenwood, Ltd.*	9,368

* Accepted.
(Continued on p. xx.)

Advertising Notes.

*Advertise judiciously—
not facetiously.*

*Any business built upon a "bluff"
overhangs a dangerous precipice.*

*People who advertise "something for
nothing" usually want to give you
"nothing for something."*

*Good advertising is news. It does'nt
make much difference if a thing be a
brick, or a grate, or a tile, or a church
bazaar, it must have forced into it
the quality of human interest.*

Appointments Wanted.

*The charge for Advertisements under this heading is
1s. 6d. per insertion not exceeding four lines, and 6d. per
line afterward, prepaid. Three insertions may be had for
the price of two. Advertisements must reach the Office not
later than 5 o'clock on Monday.*

ADVERTISER: 45, F.R.I.B.A., late
Executive Engineer, Public Works. Home and
Colonial experience. Accept nominal salary to resume
home work.—A., 21, Nemours Road, Acton.

AN ARCHITECT has TIME to ASSIST
others with Working Drawings, Details, and
Perspectives at own office. Special terms for Com-
petitions. Good general experience.—Apply, H. L.
FEDDEN, 11, Hart Street, Bloomsbury.

ARCHITECT and SURVEYOR'S Assistant
desires engagement. Associate of Sanitary Inst.
(by examination). Nine years' varied experience;
measuring up, contract drawings, details, specifications,
quantities, surveying and levelling.—H., 10, Rollscourt
Avenue, Herne Hill, S.E.

ARCHITECT & SURVEYOR'S Assistant
desires Engagement, 9 years' experience in general
and detail drawings, specifications, quantities, surveying,
&c. Excellent testimonials.—Write, ASSISTANT, Geeston
House, Ketton, Stamford.

ARCHITECT'S & SURVEYOR'S Assistant
(22), competent in all duties, working drawings,
details, measuring up, writing specifications and quan-
tities, levelling, and surveying; salary, 30s.—Box 2703,
BUILDERS' JOURNAL Office, 6, Great New Street,
Fetter Lane, E.C.

**ARCHITECT'S and SURVEYOR'S
JUNIOR ASSISTANT** desires Engagement. 4½
years' experience. Working drawings, details, surveying,
&c.—G., 33, Bickerton Road, Highgate, N.

ARCHITECT'S ASSISTANT, thoroughly
experienced in Construction and Design, including
steelwork; can take off quantities, measure up, &c.
Specifications.—Box 135, BUILDERS' JOURNAL Office,
6, Great New Street, Fetter Lane, E.C.

ARCHITECT'S ASSISTANT (29) desires
ENGAGEMENT; 10 years' experience; good
draughtsman and colourist; well up in working draw-
ings, details, surveying; good references; moderate
salary.—A. RANDALL, Hazelmere, Rusham Road, Egham.

ARCHITECT'S ASSISTANT (27). Has
had good practical experience, interior decorations,
steel construction, details, specifications, quantities, sur-
veying, levelling.—LAWSON, Mount Dallas, Polsham Park,
Paignton, Devon.

ARCHITECT'S ASSISTANT (22) requires
immediate engagement; 5½ years good experience;
working drawings, details, levels, perspectives, &c., &c.
Well up in the general office routine. Small salary for
an immediate engagement.—Apply Box 139, BUILDERS'
JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

**ARCHITECT'S & SURVEYOR'S JUNIOR
ASSISTANT** desires Engagement (22½), 5½ years'
experience. Working drawings, details and levelling.
Salary moderate.—Box 2674, BUILDERS' JOURNAL Office,
6, Great New Street, Fetter Lane, E.C.

ARCHITECT'S JUNIOR ASSISTANT de-
sires situation in a Birmingham office; 5½ years'
good experience in well-known office. Contract, Plans,
Specifications, Details, &c., good draughtsman.—Box 2663,
BUILDERS' JOURNAL Office, 6, Great New Street, Fetter
Lane, E.C.

ARCHITECT'S JUNIOR ASSISTANT,
Student R.I.B.A. (21), desires engagement. Seaside
preferred. 4½ years' experience. Working drawings from
sketches, neat draughtsman, surveying, levelling, speci-
fications, quantities; mod. sal.—BARRETT, Etruria Vicarage,
Stoke-on-Trent.

BRICKLAYER, Young and Energetic, ref.;
not afraid of work, suit Master Bricklayer, etc.—
A. G. 119, Liverpool Road, Canning Town, E.

BRICKWORK AND POINTING, &c.,
wanted; Scaffolding and Materials if wanted; good
refs.—H. F. MEADER, 39, Albert Road, Peckham, S.E.

BRICKWORK or POINTING WANTED
by competent man. Any quantity, at most reason-
able prices.—Apply W. S., Burlington Place, Woodford
Wells, Essex.

BUILDER'S ASSISTANT desires EN-
GAGEMENT. Quantities, estimating, accounts,
management, &c. Good experience. Steady and reliable.
References.—"QUANTUM," 2, Trevor Road, Hitchin,
Herts.

CLERK OF WORKS. Experienced. Wants
engagement. Thoroughly practical and reliable.
Excellent testimonials and references.—H. J., 71, St.
Anne's Hill, Wandsworth, S.W.

CLERK seeks appointment in Builder's
office. Used to correspondence, tracing, and
general office routine.—Box 137, BUILDERS' JOURNAL
Office, 6, Great New Street, Fetter Lane, E.C.

DRAUGHTSMAN desires EMPLOY-
MENT.—G. FLETCHER, Thurlleigh, near Bedford.

DRAUGHTSMAN desires Evening Work
in preparing Architects' drawings and tracings.
Terms by arrangement.—R. W. HOSKINS, 20, Camden
Street, Oakley Square, N.W.

EVENING WORK desired by neat draughts-
man in assisting Architects at office or at home.
Terms by arrangement.—Apply W. C. A., 12, Clonmell
Road, Fulham, S.W.

EVENING WORK required by a neat
Draughtsman in assisting Architects, Surveyors, or
Builders in preparing working drawings, details,
tracings, specifications, or quantities.—HENRY PHILLIPS,
Cottingham, Hull.

GENERAL FOREMAN disengaged, excellent
testimonials from Architects and also from Builder
retired. Town or country.—Apply Mr. H. JENNINGS, 70,
Lascotts Road, Wood Green, N.

GENERAL FOREMAN Disengaged wants
job. Carpenter. Aged 46. Good references. Town
or country.—H. W., 57, Chiswick Road, Lower
Edmonton, N.

GOOD MASON wants Job; piecework or
day; fixing or banker; good references.—H. E.,
8, Alpha Road, New Cross, S.E.

JUNIOR DRAUGHTSMAN (20) at liberty.
Design, Library and School Board Competitions,
Construction. Lancashire experience.—MILLS, &c.,
Architect, 6, Granville Road, Fallowfield, Manchester.

MACHINIST, JOINER, to take charge, or
work spindle and tenoning. 22 years' experience.
Country not objected to. Good refs.—H. K., 34, Cum-
berland Road, Walthamstow.

MACHINIST (27) steady, wants JOB; over
and under, thickness, rise and fall, bench, im-
prover on four-cutter; Piano or Builder's Mill; 8½.
Or could take Builder's Yard Foreman's job. Good knowl-
edge of materials.—MACHINIST, 28, Blackhorse Road,
Walthamstow.

**PLUMBER, GAS, and HOT-WATER
FITTER** wants Job; new work or jobbing; age 24.
Distance no object.—J. C., 89, Roman Road, Barnsbury, N.

PLUMBERS, &c.—Young man, 23, wants
situation with good Plumber and Gasfitter, knowl-
edge of gasfitting, would give time for a short period.—
"PLUMBER," Byron House, Harrow Road, Harlesden,
N.W.

PLUMBERS' Work, Sanitary, Leadwork,
Gas and Hot-water Fitting wanted by practical
Plumber. Distance no object; references supplied.—
JEFFERSON, 13, Warrender Road, Islington, N.

QUANTITIES.—ASSISTANCE Rendered
by capable man. 12 years' experience. Works
for well-known firms. Moderate terms. Quick and
accurate.—S. T. NUNN, 2, Minster Road, N.W.

QUANTITY SURVEYOR wishes to arrange
with Architects and Builders for preparation of
Quantities, Estimates and Accounts, punctuality,
accuracy and despatch guaranteed.—Address, Box 2667,
BUILDERS' JOURNAL Office, 6, Great New Street, Fetter
Lane, E.C.

**QUANTITY SURVEYOR'S JUNIOR
ASSISTANT**, disengaged, desires permanent or
temporary appointment; used to routine, indus-
trious, punctual, and reliable; abstract, bill, tracing, &c.;
good references; moderate remuneration required.—
Box 2686, BUILDERS' JOURNAL Office, 6, Great New
Street, Fetter Lane, E.C.

SHOP FOREMAN of JOINERS seeks RE-
ENGAGEMENT. Large experience in all kinds
of joinery, good manager of men and machinery. Good
references.—Address H. J. BRANSON, c/o Mr. G. Hack,
30, Shaftesbury Road, Watford.

SHOP or GENERAL FOREMAN seeks
RE-ENGAGEMENT. Just completed several large
shops in West End. Thoroughly practical, energetic,
and reliable in all best class work. First-class refs. from
best London firms.—G. WALKER, No. 10, Sunnyside Road,
Ealing.

STAIRCASE HAND wants job, any sort
Circular. Continued Rails done by machinery;
including Iron Core. Balusters for Stone Stairs at the
shortest notice.—STAIRS, 30, Charles Street, Hatton
Garden, E.C.

TO LARGE EMPLOYERS OF LABOUR.
THE NATIONAL ASSOCIATION for RESERVE
SOLDIERS, 119, Victoria Street, S.W., tel. 367, West-
minster, telegrams, "Employoos," London, supplies men
of good character only, as Porters, Labourers, Caretakers,
Carmen, Night Watchmen, Timekeepers, Carpenters,
Masons, Bricklayers, Navvies, Handy Men, &c. Charac-
ters up to date. No fees.—Apply SECRETARY, as above.

TO BUILDERS and SPECULATORS.
Wanted Joinery, Carcassing, Stairs (piecework), in
large or small quantities. Lowest prices; any distance.—
REID, 91, Mill Hill Road, Acton.

**TO HEATING ENGINEERS.—BRICK-
LAYER**, 12 years' experience with London firm of
Hot Air Heating Engineers, is open to contract for instal-
lations in town or country. Good refs.—H., 11, Burnfoot
Avenue, Munster Road, Fulham, S.W.

**WALKING or WORKING FOREMAN of
PAINTERS** seeks RE-ENGAGEMENT. Ex-
perienced manager. Accustomed to full control. Practical
in artistic decorations. Good artist. Present situation
4 years.—State wages, "FOREMAN," 59a, Marlboro' Road,
Bowes Park, N.

YOUNG MAN seeks Sit. as Foreman
for Builder and Contractor. Experience of all
trades in building; good refs. from Architects.—Apply
Box 2681, BUILDERS' JOURNAL Office, 6, Great New Street,
Fetter Lane, E.C.

YOUNG MAN (28, married), wants Situation
on good Country Estate, as Grainer, Gilder,
Decorator, &c. Steady and reliable. Good references.—
S., 44, Beaconsfield Road, Croydon.

Appointments Vacant.

*The charge for Advertisements under this heading is
1s. 6d. per insertion not exceeding four lines, and 6d. per
line afterward, prepaid. Three insertions may be had for
the price of two. Advertisements must reach the Office not
later than 5 o'clock on Monday.*

CLERK wanted at a large Works in Lan-
cashire, for Wages and Correspondence. Must be
reliable and quick at figures; shorthand and typewriting
a necessity. State age and experience, also wages
required.—Address, Box 2702, BUILDERS' JOURNAL
Office, 6, Great New Street, Fetter Lane, E.C.

TRAVELLER calling upon Architects and
Builders, wanted to represent Stained Glass House,
Commission only.—Write "TRAVELLER," 53, Eden Street,
Kingston-on-Thames.

VACANCIES for APPRENTICES—with-
out premium—for Marble and Stone-working,
Polishing, &c., South London.—Apply Box 2696A,
BUILDERS' JOURNAL Office, 6, Great New Street, Fetter
Lane, E.C.

WANTED, COMPETENT CLERK, well
up in Scale and Detail Drawing; Quantities;
Time Sheets; Costs; Interviewing Clients, and Ac-
counts. Permanency. Seaside town.—Box 2694,
BUILDERS' JOURNAL Office, 6, Great New Street, Fetter
Lane, E.C.

Drawings, Tracings &c.

DRAUGHTSMAN. 6 years' experience.
Desires evening work. Perspectives, inking-in
Architect's drawings, and tracings.—P. R. WALKER,
71, Ayloun Road, Brixton, S.W.

**PERSPECTIVES EFFECTIVELY EXE-
CUTED.**—CLAUDE H. SIMPSON, 6, Moor Oaks
Road, Sheffield.

**PLANS, SPECIFICATIONS, AND
QUANTITIES** prepared on reasonable terms.
Architects assisted. Builder's quantities taken off
promptly.—"Alpha," Box 2707, BUILDERS' JOURNAL Office
6, Great New Street, Fetter Lane, E.C.

**TO ARCHITECTS, BUILDERS, AND
OTHERS.**—Plans prepared at lowest charges;
Tracings from ss. Specifications, &c., accurately type-
written, 1s. per 1,000 words.—D. R. MATHISON, 39a,
Algernon Road, Hendon.

**5 O'CLOCK P.M. MONDAY IS THE LATEST TIME FOR RECEIVING "WANT" ADVERTISEMENTS.
OFFICE: 6, GREAT NEW STREET, FETTER LANE, E.C.**

BUILDERS' JOURNAL EMPLOYMENT REGISTER.

FOR 3/- WE WILL ADVERTISE YOU FOR SIX WEEKS.

This register is compiled to bring together Employer and Employed, to their mutual advantage, thus supplying a long recognised need.

In the building trades when a rush of work comes an employer suddenly finds himself in urgent need of employees. Our scheme is designed to assist him in this respect. Employees cannot afford to regularly advertise. After the week in which the advertisement appears it is lost. By our scheme we sustain these advertisements for six weeks. For 3/- we give three insertions (four lines) in our "Appointments Wanted" column (*see* page xvi), and also six insertions in the "Employment Register."

Instructions.—Advertisers must furnish their names and full addresses, which will not be published; and a number is assigned to each for identification. All communications will be treated in the strictest confidence. Abbreviations employed:—s., salary required; ex. experience; refs., references; yrs., years.

ACCOUNTANT.

- 115.—ACCOUNTANT gives correspondence lessons in book-keeping for Builders; also to open, keep, supervise, write up, or audit books.

ARCHITECTS' ASSISTANTS.

- 70.—ARCHITECT'S & SURVEYOR'S ASSISTANT. Age 22. 6 yrs. ex. in all branches. Mod. s. London preferred.
72.—ARCHITECT'S ASSISTANT. 6 yrs. ex. Details, contract drawings, surveying, and quantities.
73.—ARCHITECT'S ASSISTANT, with own office, can assist others in working drawings, details, and perspectives.
76.—ARCHITECT'S ASSISTANT, can assist in preparation of drawings & perspectives.
78.—ARCHITECT'S ASSISTANT. Good refs., desires situation as improver; neat draughtsman.
81.—ARCHITECT'S ASSISTANT desires engagement in Midlands. Mod. s. Good genl. experience.
83.—ARCHITECT'S ASSISTANT, age 22½, mod. s., good draughtsman, general ex.
87.—ARCHITECT'S ASSISTANT (24), varied ex. and good general knowledge. London preferred.
88.—ARCHITECT'S ASSISTANT. 5 yrs. varied ex., draughtsman, knowledge of surveying, exceptional refs., mod. s., abstainer.
89.—ARCHITECT'S ASSISTANT (29), ten yrs. good general ex., draughtsman and colourist, good refs., mod. s.
90.—ARCHITECT'S JUNIOR ASSISTANT. 5 yrs. ex., good refs., mod. s.
97.—ARCHITECT'S JUNIOR ASSISTANT. 5½ yrs. good general ex., good draughtsman. Birmingham situation wtd.
104.—ARCHITECT'S ASSISTANT (22½). 5½ yrs. ex. Mod. s.

- 109.—ARCHITECT'S SENIOR ASSISTANT, first class ex., good draughtsman and colourist. Design, and details.
110.—ARCHITECT'S ASSISTANT, F.R.I.B.A., age 45. Home and Colonial ex., desires to resume home work. Nominal salary.
111.—ARCHITECT'S and SURVEYOR'S ASSISTANT, 6 yrs. ex. Designs, wkg. drawings, specifications, and surveying. Ex. testimonials.
113.—ARCHITECT'S ASSISTANT, 5½ yrs. ex., good all-round ex. and knowledge. Good refs.
118.—ARCHITECT'S ASSISTANT (23), 6 yrs. ex. Good refs. Wkg. drawings, details, perspectives, measuring up and quantities.
121.—ARCHITECT'S ASSISTANT. Age 27. Good ex. in all branches of work.
123.—ARCHITECT'S ASSISTANT, 9 yrs. varied ex. of all branches, A.S.I. by exam.
125.—ARCHITECT'S ASSISTANT, age 22, competent in all branches, mod. s., good ex.

BRICKLAYERS.

- 95.—BRICKWORK & POINTING wtd. by practical man good refs., distance no object.
96.—BRICKWORK & POINTING wtd., good refs. Scaffolding & materials if reqd.
103.—BRICKWORK & POINTING wanted by experienced man.
122.—BRICKLAYER. Young and energetic, refs. given.
123.—BRICKLAYER, 12 yrs. London ex. in firm of heating engineers, open to contract for installations.

CLERK.

- 86.—BUILDER'S CLERK. Shorthand, tracing, office routine, mod. s.

DECORATOR.

- 120.—Young man (28), wants job on country estate as gilder, decorator, or grainer. Good refs.

(Continued on page xx.)

**THATCHING AND
REED LAYING.**
J. G. COWELL,
SOHAM.

Interesting to every Builder.

POLING BOARDS, selected lengths and thicknesses (best quality and full measure). Also Scaffold Boards, Putlogs, Soanlings, Deals, Battens, and Boards. Lowest wharf prices.
O. H. GLOVER & Co., Ltd., Importers, Hatcham Saw Mills, Old Kent Road, S.E.

BLUE and FERRO-GALLIC PRINTS

White line on blue ground, and dark line on white ground.

W. F. STANLEY & Co., Limited,
13, Railway Approach, London Bridge, S.E.

NEW REVISED PRICE LIST POST FREE.

All Prints by Electric Light, no extra charge.

Tel. Ad.: "TRIBRACH-LONDON." Tel. No. 871 Hop.

LONDON PLATE-GLASS INSURANCE CO., LTD.

Head Office: 49, Queen Victoria Street, E.C.

Ten per cent. of the Premiums returned every six years in cases where no claim has arisen.

APPLICATIONS FOR AGENCIES INVITED.
LIBERAL TERMS FOR BUSINESS INTRODUCED.

THE LOCAL GOVERNMENT JOURNAL.

For Guardians, Councillors, and Officials of all Public Authorities.

THE BEST MEDIUM FOR OFFICIAL NOTICES
RELATING TO OFFICERS, SUPPLIES, &c.

The RECOGNISED MEDIUM between
Local Authorities and Contractors.

SPECIAL FEATURES:

Legal Questions, Answered by a Barrister-at-Law, Free of Charge.
Cases in Courts of Interest to Public Officials and Members.
The Official's Corner (Personal and other Notes).
Forthcoming Works. Loans Wanted, &c.
A List of Situations Vacant.
A List of Tenders Required by Public Bodies.

EVERY SATURDAY, PRICE 2d.

27a, FARRINGTON STREET, E.C.

LIGHT & DARK SEA GREEN STONE, MOTTLED GREEN STONE,

For Mullions, Sills, Heads, Quoins,
Jambs, Fenders, &c.

Buttermere Green Slate and Stone Works, KESWICK.

"ACCOUNT BOOKS and How to Use Them." "BOOKKEEPING FOR BUILDERS."

Showing Clearly How to Keep all the Account Books Used in the Office of a Builder and Contractor. Post free 1s. 2d.

CORSE, BEDFORD ROW STATIONERY WAREHOUSE,
THEOBALD'S ROAD, LONDON.

All Books described are kept in stock.
EVERYTHING FOR ARCHITECTS AND BUILDERS.

GIBBS Brothers, LOUGHBOROUGH.

Manufacturers of

Best Red Pressed and Sand Stock Facing
Bricks, &c., also of
Mountsorrel Concrete Paving Flags,
Window Heads, Cills, &c.

SLATE MERCHANTS.

Stocks of VELINHELI and BANGOR on hand.

Pilkington's Tiles

WORKS:

Clifton Junction, near Manchester.

Manufacturers of TILES, FAIENCE & MOSAIC.

London Show Rooms:
37 & 38, Shoe Lane, E.C.
Manchester Show Rooms:
37, Cross Street.
Glasgow Show Rooms:
96, Renfield Street.

YORKSHIRE STONE.

Any kind supplied in the rough, sawn,
or dressed ready for fixing.

WM. KNOWLES, Cullingworth, nr. BRADFORD.

BRICKS. RED BRICK.

A large Stock of best Red Facings, Light, Medium, and Dark. Red Sand Faced. Also Stock of 100 Patterns Moulded Goods of all descriptions, including CHIMNEY POTS, RIDGE TILES, FLOOR TILES. Architects' own Designs to Order on shortest notice.

The South Lincolnshire Brick and
Tile Co., Ltd., Bourne, Lincs.

ESTABLISHED 1851,

BIRKBECK BANK,

Southampton Buildings, Chancery Lane, London.

2½% DEPOSIT ACCOUNTS 2½%
repayable on demand.

The BIRKBECK ALMANACK, with full particulars,
post free.

C. A. RAVENSORFT, Managing Director.

FOR STONE

From Midland and North Country Quarries, write
J. HODSON & SON,
Quarry Owners and Stone Merchants,
NOTTINGHAM.



When writing to Advertisers please mention The Builders' Journal.

TENDERS—cont. from p. xv.

Long Eaton.—For alterations and additions to and renovation of "West Villa," Derby Road, for S. A. Wallis, Esq. Mr. Ernest Hooley, architect, Derby Road, Long Eaton. Quantities and specifications by the architect:—

Alterations and additions, exclusive of baths, &c., and fire-grate, &c.

G. Youngman & Son, Long Eaton .. £430 0 0
F. Perks & Son,* Long Eaton .. 392 19 8
J. & G. Wilders, Keyworth .. 392 0 0
J. Brown & Son, Long Eaton .. 389 10 0
For electric wiring and bells, exclusive of fittings.
McAlpin & Co., Long Eaton .. £47 17 3
H. T. Hazzledine,* Nottingham .. 46 0 0
G. M. Webster, Nottingham .. 45 0 0

For painting, paper-hanging, &c., exclusive of supplying papers.

F. A. Analey, Beeston .. £90 15 0
T. Pegg, Long Eaton .. 89 10 0
H. Moore, Long Eaton .. 85 0 0
W. T. Goldsworth, Long Eaton .. 83 10 0
J. Crossley, Newark .. 81 0 0
H. Stokes, Nottingham .. 80 0 0
F. W. Holmes, Long Eaton .. 66 15 6
T. C. Guttridge .. 58 10 0
F. Perks & Son* .. 57 0 0

* Accepted.

London, E.C.—For the erection of new premises Gough Square, E.C., for Mr. H. C. Knowles, exclusive of fixtures and fittings. Mr. C. Watkins, architect, Glebe House, Sherborne Lane, E.C.:—

Foster & Dicksee .. £22,660
Hall, Bedall & Co. .. 22,340

Lascelles & Co. .. £21,948
Colls & Sons .. 21,790
Lawrence & Sons .. 21,288
H. Lovatt .. 20,900
J. Greenwood, Ltd. .. 20,767
Patman & Fotheringham .. 20,573
W. Downs .. 20,188
Ashby & Horner* .. 19,957

* Accepted.

London, S.E.—For erecting shop, 20, Rye Lane, Peckham, S.E., with residential flats over, for Mr. E. Swiffin. Mr. E. J. Stevens, architect, 246, Camberwell Road. Quantities supplied:—

Falkner & Sons .. £2,493
Little & Senecal .. 2,474
Massy & Sons .. 2,462
Balaam Brothers .. 2,325
G. Neal .. 2,257
G. Newton .. 2,150
Hooper & Son .. 2,145
G. Parker .. 2,135
W. V. Goad .. 1,958
H. Lind .. 1,947
J. Ham* .. 1,899

* Accepted.

London, W.C.—For the erection of the electrical standardizing, testing and training institute at Southampton Row. Mr. G. D. Martin, architect, 3, Pall Mall East, S.W.:—

Howard & Co. .. £15,487
H. Lovatt .. 15,400
F. G. Minter .. 15,000
Dove Brothers .. 14,875
Jerrard & Sons .. 14,747
Colls & Sons .. 14,580

C. F. Kearley .. £14,549
Gough & Co. .. 14,544
Lawrence & Sons .. 14,386
Patman & Fotheringham .. 14,373
Holloway Brothers .. 14,300
J. Carmichael .. 14,260
Perry & Co. .. 14,155

London, S.E.—For the erection of nine shops Norwood Road, S.E. Mr. A. L. Guy, architect, 4, Verulam Buildings, Gray's Inn, W.C.:—

Hollingsworth .. £9,291 0 0
Renwick .. 9,162 0 0
Line .. 8,905 0 0
Kent .. 8,190 0 0
Pearce .. 8,020 0 0
Orfeur .. 7,729 0 0
Hedges .. 7,695 0 0
Roberts .. 7,599 0 0
Blyton & Sons .. 7,400 0 0
Coates .. 7,246 9 0
Hocking .. 7,214 9 6
Smith & Sons .. 7,186 0 0
West & Richards .. 6,885 0 0
Pillar .. 6,875 0 0
Taylor .. 6,181 0 0
J. Watt .. 6,475 0 0
Richardson & Sons .. 6,270 0 0
Ellis & Turner,* Aldersgate Street .. 6,254 0 0

* Accepted.

Mallow (Ireland).—For the erection of sixteen artisans' dwellings, for the Mallow U.D.C. Mr. Brian E. F. Sheehy, architect, 57, George Street, Limerick:—

C. Kelleher, Glanworth, co. Cork .. £4,000
J. J. Coffey, Midleton do. .. 2,791
J. O'Keefe,* Mallow do. .. 2,160

* Accepted.

BUILDERS' JOURNAL EMPLOYMENT REGISTER—(Continued).

DESIGNERS, TRACINGS, &c.

- 84.—ARCHITECTURAL DRAUGHTSMAN, 6 yrs. ex., desires evening work.
89.—ARCHITECTURAL DRAUGHTSMAN, neat, reqrs. eveng. wrk. at office or at home.
101.—DRAUGHTSMAN (23). 1st class qualifications in all branches. 6 yrs. ex.
117.—ARCHITECTURAL DRAUGHTSMAN (20), ex., design, competitions, construction.
124.—ASSISTANCE GIVEN TO ARCHITECTS in plans, specifications, quantities, &c.

DRAUGHTSMEN.

- 129.—DRAUGHTSMAN disengaged.
130.—DRAUGHTSMAN desires evening work. Drawings, tracings, &c.

FOREMEN.

- 85.—SHOP FOREMAN OF JOINERS. Good genl. ex. good refs.
102.—GENERAL FOREMAN (46). Good refs. Town or country.
105.—BUILDER'S OR CONTRACTOR'S FOREMAN. Varied ex. and good refs.
116.—GENERAL FOREMAN. Excellent refs. Town or country.

JOINERS.

- 106.—JOINERY, CARCASSING, STAIRS wanted.
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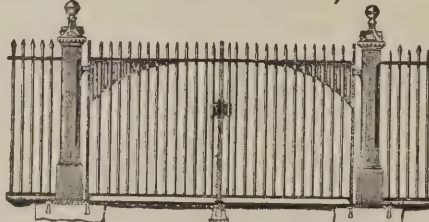
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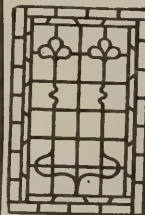
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LONDON 1832

THE BUILDERS' JOURNAL

AND ARCHITECTURAL RECORD.

January 13, 1904. Vol. 19, No. 466.

6, Great New Street, Fetter Lane, E.C.

Summary.

A pamphlet describing Liverpool Cathedral, and illustrated with sketches by Mr. Bodley and Mr. Scott, is to be issued by the Organization Committee. (Page 17.)

In order that the preacher may be heard better, the pulpit in the nave of Winchester Cathedral has been moved from the south to the north side and a sounding-board suspended above for deflecting the sound in any desired direction. (Page 16.)

The work of strengthening the Menai Suspension Bridge is making progress. Men are working on planks suspended directly over the river, and a boat is kept handy in case anyone falls over. (Page 17.)

Although shorn somewhat of its original height, the steeple of St. Bride's, Fleet Street, still overtops that of any other Renaissance church in the metropolis, being 226ft. against the 221ft. 9in. of its rival in Cheapside. On a clear day the passer-by can discern the red colour of the granite columns in the upper stages of the latter: the original columns were of Portland stone, which reminds us that the spire has been twice restored. (Page 14.)

Alterations have been made in the plans for the Usher Hall, Edinburgh, with the view of giving a more dignified aspect to Princes Street. (Page 17.)

The buildings of the proposed international exhibition for Dublin, 1906, are estimated to cost £150,000. (Page 22.)

The repair of the vaulting to the choir of Toledo Cathedral, which fell in at the beginning of December, is being undertaken, but grave fears are expressed for the stability of the whole structure. (Page 22.)

Every church with a north and a south door opposite one another has a devil's door—the north one: in former days it was believed that when a christening took place the Holy Ghost entered by the south door at the sign of the Cross while the Devil took a hasty departure by the north. (Page 17.)

Mr. Hugh Stannus, lecturing at the meeting of the Architectural Association, treated the subject of the development of the "styles" of Egyptian architecture from an evolutionary standpoint and pointed out that at first two separate styles grew up—in Lower Egypt the compound shaft, in imitation of the reeds which grew on the swamps of the Delta, and in Upper Egypt the stone pier, from the prevalence of stone in that country. In the former the distinctive decorative motive was the papyrus, and in Upper Egypt the lotus. With greater civilization and improved carrying facilities there was increased variety in material, and the two countries and their styles merged into one. (Page 19.)

NOTICE.—The index to Vol. 18 of THE BUILDERS' JOURNAL is now ready, and can be had on application to the Publisher, 6, Great New Street, E.C., post free 1d.

A Note about Fire Curtains.

THE reference to fire-resisting curtains in London theatres made in our issue for last week, when dealing with the terrible occurrence at Chicago, needs to be supplemented in order that no misunderstanding may arise. First it should be explained that the majority of West-End theatres are licensed by the Lord Chamberlain, while those in the suburbs are sanctioned by the County Council. Since the latter has had the constructional control of all new theatres built within its jurisdiction fireproof curtains have been insisted upon, but, as we stated in our last issue, there is no stipulation that the curtain shall be lowered during every performance. The anomaly of there being two licensing bodies, one enforcing stringent regulations and the other not enforcing any, has recently been removed by the Lord Chamberlain insisting that all theatres under his control must comply with the Council's regulations (ensuring that the building is properly constructed and fitted) before he grants a licence for compliance with his own. Besides this requirement, he has issued additional rules which do insist on the lowering of the curtain during every performance. This has now been followed in County Council theatres generally, but it would be advisable for the Council to incorporate the rule in its own, so that the theatre regulations may be made uniform. The drift seems to be towards the Council regulating the construction and the Lord Chamberlain the plays and the management.

A New Method of Tunnelling.

IN the tunnel under the Harlem River, in the United States, a new method of construction is being adopted. The western portion was built by driving sheet-piling on each side, cutting the piles off level, and laying on them a water-tight platform of timbers, so that the water could be pumped out of this preliminary enclosure; then pneumatic pressure was applied and the tunnel proper built inside. This method has obvious advantages, in that the timber enclosure, which is filled with compressed air, presents a perfectly definite resistance, so that there is no danger that the air will unexpectedly escape, as so often happens with compressed air in an excavation in sand or silt. In the eastern half of the tunnel an improvement over this method is proposed, consisting in the elimination of the wooden platform forming the temporary roof of the enclosure and the substitution of it of the permanent roof of the tunnel, which, when the sheet-piles are driven and cut off, is floated over them on pontoons and sunk into position, the permanent walls and floor being subsequently built up under it. Both these ingenious methods are due to the con-

tractor, Mr. McBean. They materially reduce the cost of submarine tunnelling, and the opportunity which they afford for setting the tunnel, if necessary, above the actual bottom of the stream enables engineers to arrange easy grades for submarine roads under deep channels.

The Sandringham Fire.

IT will be remembered that we stated the cause of the outbreak at Sandringham to have been connected with a "well fire," a statement which we made on the authority of the newspaper press. Since our note appeared the Well Fire Co., Ltd., of Newcastle-on-Tyne, inform us that they have been inundated with enquiries. They state that the outbreak was not caused by a "well fire," which name they alone, as patentees, are entitled to use: though a number of their fires are in use at Sandringham. We are sure we had no intention of prejudicing what is a perfectly safe and convenient grate. The point to which we drew attention was not to the grate itself but to the manner of fixing it over a timber beam; it was that which was responsible for the fire, and we censured the neglect of not carrying the hearth on a proper trimmer beam or arch.

The City Surveyor Again.

THE Birmingham Architectural Association have passed a resolution, and sent copies of it to the Lord Mayor, the Town Clerk and the members of the City Council, protesting against the increasing amount of architectural work carried out by the City Surveyor, believing that it is not in the interest of the ratepayers nor conducive to the best architectural result when important building work is carried out without the designs and superintendence of a qualified architect, nor fair to the architectural profession, which is well represented in Birmingham, to be repeatedly ignored when public buildings are contemplated by the City Council. This is following the lead of the Birmingham gas-fitters who complained of the competition of the city gas department. About four years ago a concession was made by the Council in the promise that for all buildings where the expenditure amounted to £10,000 or more an architect should be engaged. But the Architectural Association wants more than that. The members contend that not only is unfairness caused to them by the increasing amount of work performed by the surveyor's strengthened staff of draughtsmen, but that the city is suffering from an architectural point of view. The £10,000 limit, however, is strictly observed, and it is contended that in regard to simple buildings the surveyor's staff can do the work as well as an outside architect.

NOTES ON THE CITY CHURCHES.—II.

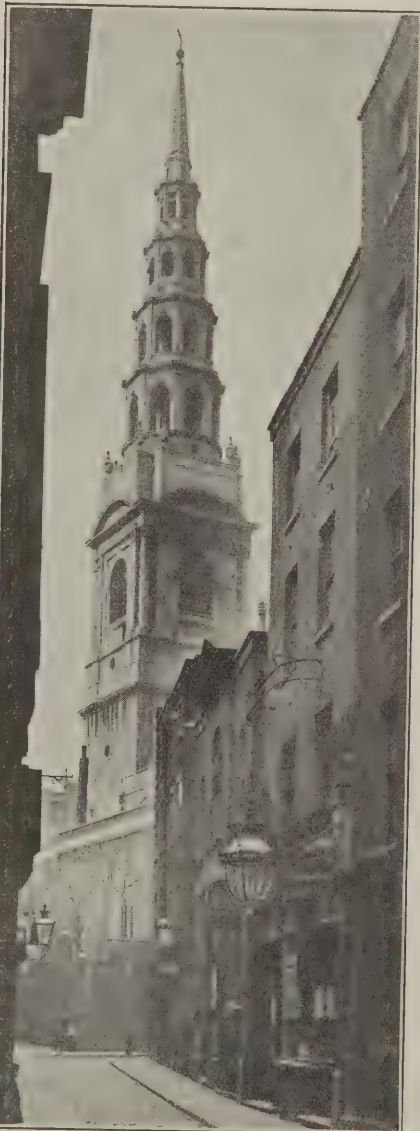
(Continued from p. 261, No. 462.)

By F. HERBERT MANSFORD.

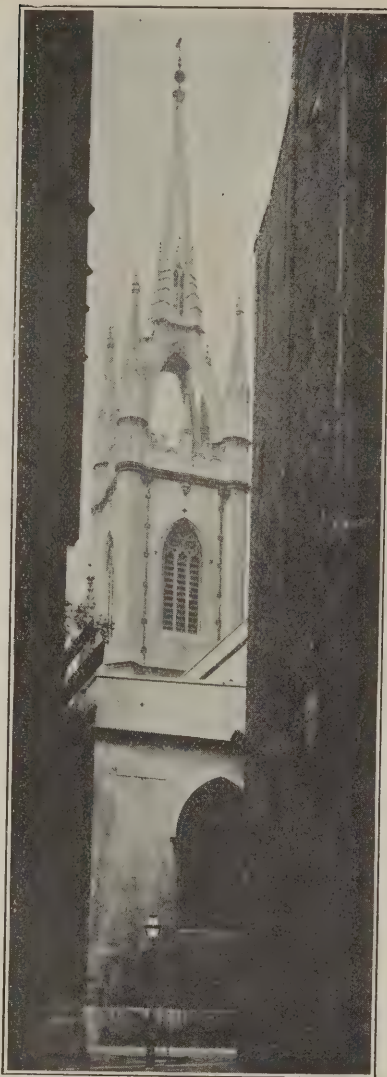
Steeple.

WREN probably introduced the dome into England, and it is a proof of his genius that the dome of St. Paul's still remains unsurpassed (in this country at least) for external effect and sound construction; while that of St. Stephen's, Walbrook, has given the church a European reputation. Wren seems to have grappled successfully with new problems, and this is especially the case with the incorporation of such a mediæval feature as the spire with neo-classical buildings. Here again his best examples are unsurpassed, and many of his lesser ones rarely equalled for beauty of proportion, economy of material and elegance of design.

Although shorn somewhat of its original height, the steeple of St. Bride's, Fleet Street, still overtops that of any other Renaissance church in the metropolis, being 226ft. against the 221ft. 9in. of its rival in Cheap-side. An excellent view of it can be obtained from Bride Lane near the south-east corner of the churchyard—the pavement there is about 10ft. below the yard level, and from the aspect there is generally a greater play of light and shade than can be seen from the north in Fleet Street. The steeple of St. Mary-le-Bow is much better known, both on account of its situation and the greater elegance of its design. On a clear day the



ST. BRIDE'S, FLEET STREET, FROM BRIDE LANE.



ST. DUNSTAN'S-IN-THE-EAST.

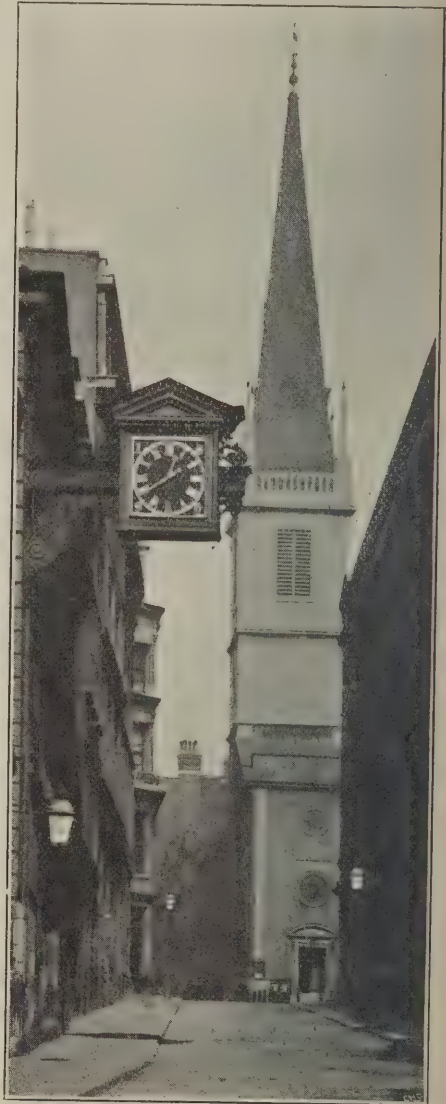
passer-by can discern the red colour of the granite columns in the upper stages. The original columns having been of Portland stone, these remind us that the spire has been twice restored. On the first occasion when the vane was lowered the workmen mounted their young master astride the dragon and drew him to the builder's yard. He became afterwards Sir William Staines, Lord Mayor of London, but possibly his first procession gave him the greater pleasure. The loftiest timber steeple is that of St. Margaret Pattens, which soars within 2ft. of its neighbour, the Monument. Another interesting spire is that of St. Dunstan's-in-the-East. It is carried upon the intersection of two arches, these finding their abutments in the ample pinnacles of the tower. This is usually regarded as a northern type, but it existed in a modified form in the old church of St. Mary-le-Bow. The charming effect of sky seen between the spire and the tower is as attractive as that of the open-traceried lantern of St. Dunstan's-in-the-West.

Wren was occasionally persuaded to essay Perpendicular Gothic in his towers, notably in the cases of St. Mary Aldermay and St. Michael's, Cornhill. The latter was designed by him fifty years after his commencement of the church, and is thus one of his latest works. A fine view of this tower, that from Bishopsgate Street, has only been obliterated within the last year.

The steeple of St. Swithin's, London Stone, is probably one of the least satisfactory of the many designed by Wren. The angles at the top of the tower are splayed back in a manner that is novel and, one may hope, unique. The outline at night, too, from several positions appears distorted. The

tower, resting on old foundations, is placed at an angle of the site where, even before the construction of Cannon Street, it could least be seen. One wonders if Wren consequently felt that this afforded a favourable opportunity for experiment. A happier method of treating the junction of a square tower and octagonal lead spire is to be seen at St. Martin's, Ludgate, and it is interesting to read that "a gratuity of 5 guineas for his care in promoting the finishing of the steeple was given to Wren by the parishioners."

Christ Church, Newgate Street, possesses a noble steeple, but it has been partly spoilt by the removal of several stone angle vases in or about the year 1828. These must have obviated the telescopic outline of the upper stages. The red-brick towers of a few



ST. MARGARET PATTENS, ROOD LANE, E.C.

churches have been coated in cement—as unfortunate a concession to a once-prevailing fashion as the filling of Classic windows with tracery, or the removal of old pews in more recent times. When the parishioners of St. Clement, Eastcheap, presented Wren with a third of a hogshead of wine at a cost of £4 2s. as a mark of satisfaction, the church externally was innocent of such garb. It was probably added as a compliment to King William Street, the construction of which threatened the edifice. The towers of St. Mary Abchurch, St. Andrew Undershaft and St. Stephen, Walbrook, have been stripped of cement. St. Michael, Bassishaw, might have found stronger friends in its hour of need if its colour picturesqueness had not been obscured by stucco in 1821. In this connection one wonders why the stone façades at the eastern ends of St. Peter's,



CHRIST CHURCH, NEWGATE STREET,
FROM THE NORTH-EAST.



ST. MICHAEL'S, GARLICKHITHE.



ST. MARTIN'S, LUDGATE, FROM THE
GARDENS OF THE STATIONERS' HALL.

Cornhill, and St. Stephen's, Coleman Street, are still painted at intervals.

The steeple of St. Botolph, Bishopsgate, designed by James Gold, occupies an unusual, but logical, position over the altar at the extreme east end of the church. It is strange that an architect so unconventional should have left no other reminder of his existence. Whether the important church of St. Helen, Bishopsgate, ever had a steeple will probably remain doubtful. It is possible that a bell-tower existed, belonging to the priory rather than the parish, and so perished at the dissolution of the monasteries. Thomas Allen in his "History and Antiquities of London" refers to the mention of "a bell-house or steeple" in a grant of Henry VIII., and suggests it was over the gate leading into Bishopsgate Street. Sir Thomas Gresham is said to have promised the parish a steeple; but he did not live to fulfil the promise, unfortunately, for an Elizabethan steeple would have been of rare interest. The present insignificant turret dates from the seventeenth century.

Owing to the demolition of churches and the general increase in the height of new buildings, London can be no longer characterized as "a city of steeples," but in a few instances the towers have been preserved when the churches have been destroyed. Besides that of St. Olave's, Old Jewry, now forming part of a rectory, there are those of St. Mary Staining, a mediæval tower standing in a garden behind the London Tavern, and the pigeon-frequented belfry of St. Mary Somerset in Upper Thames Street.

Bells.

Closely connected with the subject of steeples is that of bells. Several peals exist, but few are rung. The steeples of St. Bride's, St. Giles, and St. Michael, Cornhill, and St. Mary-le-Bow, each contain twelve bells;

while those of St. Magnus, St. Sepulchre, and All Hallows, Bread Street, possess ten each. At St. Bride's Church the first peal of twelve bells was completed in 1724. Those were the times when bell-ringing was fashionable, and the ringers at this church often drove away in their carriages.* Yet a year later there is an entry in the churchwardens' accounts of St. Giles, Cripplegate: "Paid for a leg of mutton for ye ringers on Ascension Day 2s. 1d." The curfew used to be tolled at St. Martin's-le-Grand, All Hallows, Barking, St. Giles and Bow Church. Probably the oldest bells are those at St. Bartholomew the Great; they date from 1510, and each is duly dedicated to a patron saint and inscribed "Ora pro nobis." These bells hung in the centre tower of the priory church until it was demolished in 1628 and the existing brick tower erected. There is a hand-bell preserved in the north aisle of St. Sepulchre's that used to be rung outside the condemned cell the night before an execution, the ringer chanting meanwhile a poetical exhortation; this besides the well-known tolling of a bell in the tower of this church at the moment of death. A once celebrated bell was that at St. Antholin's, Watling Street, which at the end of Elizabeth's reign tolled at 5 a.m. to call the parishioners to service and to sermon. It was the High Church party who objected to this curtailment of peaceful slumber, and considerable feeling was aroused. The bell, or another from the same church, is now used as a dinner bell at the Hall of the Grocers' Company.

Environment.

Most of the churches are becoming more and more hemmed in with lofty buildings, but there are a few fortunate exceptions. Amongst those that have suffered most may be mentioned All Hallows, Lombard Street; St. Mildred, Bread Street; and St. Magnus, London Bridge. Beneath the steeple of this last church once passed all the traffic of London Bridge. The aisles were shortened

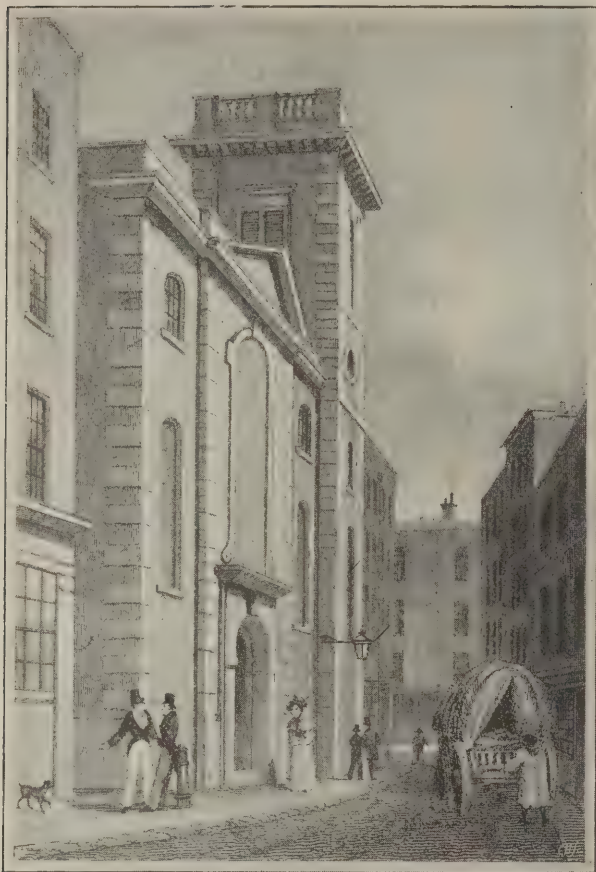
* The Earl of Bridgewater was "an indefatigable ringer" at St. Giles, Cripplegate, towards the close of the seventeenth century.

and the footway laid through the tower arches in 1760. This explains why the north and south tower arches are not central with the upper part of the steeple, for being originally internal the change of axis could not be seen. It has been suggested that the tower was purposely constructed on arches so as to allow for a future widening of the approach to the bridge, but, besides the change of axis, there are two other facts which render this foresight improbable. First, the site being ample, Wren might easily have kept back the body of the church entirely behind the tower. Secondly, Elmes in his great memoir of Wren makes no mention of this matter, although the alteration was carried out within the recollection of some of his readers, and although he (like a good biographer) says all he can justly for his hero—even to the extent of allowing the printer on one occasion to refer to Wren as St. Christopher!

The dome of St. Stephen's, Walbrook, has been scarcely visible externally since the market-place to the north has been absorbed by the Mansion House.* Previous to 1737, St. Stephen's soared above stalls of fruit and herbs, and formed a background to a celebrated equestrian statue of Charles II. Going back into the Middle Ages we find the stalls occupied by butchers, and that the parishioners on the west side of Wall Brook have to cross the stream to enter their church.

Previous to the construction of Holborn Viaduct, St. Andrew's Church was a prominent landmark, its east end towering above the little houses of Shoe Lane when seen from the City side of the Fleet Valley. Now the floor of the church is many steps below the level of the street from which it is generally approached.

* "Behind proud Dance's palace, in disgrace,
Retiring Walbrook hides her blushing face."



ST. CLEMENT'S CHURCH, EASTCHEAP.

As so many churches have suffered in scale and dignity by the erection of buildings as lofty and often loftier than themselves, it is doubly refreshing to refer to a few instances where alterations in the environments have also been improvements.

The construction of Queen Victoria Street, although indirectly the cause of the demolition of St. Antholin's, brought conspicuously into view the churches of St. Mary Aldermary, St. Nicholas Cole Abbey, and St. Andrew, Wardrobe. The custodians of this last edifice have recently taken full advantage of this by the erection of a stone retaining wall to a turfed bank and the construction of new entrance gates to the flight of steps which the altered level rendered necessary. Messrs. Banister Fletcher & Sons were the architects of this work.

The north side of All Hallows, Barking, has been brought into prominence through street improvements, and here again the authorities have shown their appreciation of the fact by the erection of a spacious porch with a room above, the whole forming a pleasing example of the skill of the late J. L. Pearson, R.A.

The north side of St. Giles's Church, Cripplegate, has been similarly opened up by the demolition of the ancient houses which formerly abutted upon the church. Opinions may differ as to whether the loss has not been greater than the gain, but as the old wooden structures have gone there can be no question that the more the church is left open to view the better, especially as two aisle windows and an octagonal stair turret have been brought to light. From this turret is a small doorway which probably opened into a room above a formerly existing porch. Considerable local effort is being made to acquire the land between the church and the street as an open space and to adorn it with a statue of Milton.

But no church has gained so much in this respect as St. Mary Woolnoth. Previous to the construction of King William Street, the

coupled towers fronted Sherborne Lane, and the south elevation of the church was scarcely visible, which explains why the façade in Lombard Street is so much more elaborate; though unfortunately this is always in shade. Wren thoroughly realized the value of a south elevation and in his scheme for rebuilding the City showed most of the churches on the north side of his greatest thoroughfares.

If Wren could return to-day how disappointed he would be to find that no church in the City presents a front to the river. One of his favourite schemes was for an open quay from the Temple to London Bridge, and to a certain extent he succeeded in carrying out the idea. It is mainly within the last century that the lofty warehouses have been raised which so effectually shut out the view of Wren's Thames Street churches and even hide the body of the cathedral itself.

Commercial needs certainly have a paramount claim, but one could wish they were sometimes better administered.

(The next article will appear on February 10th.)

Bricks and Mortar.

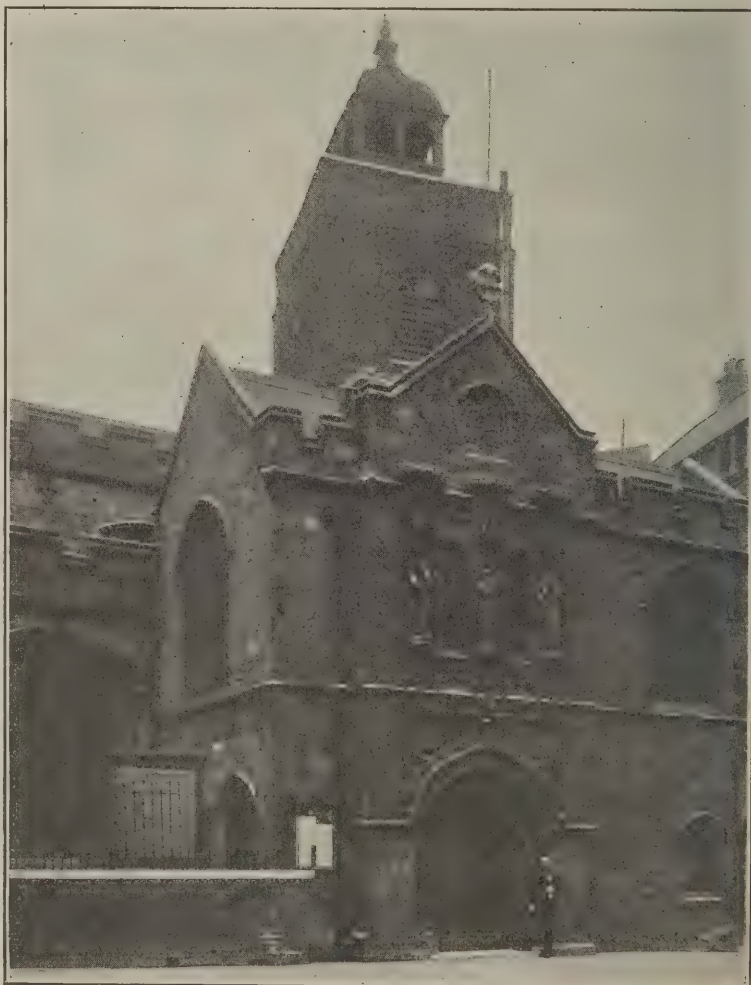
Aphorism for the Week.

Unity of style is essential to consistency. We must select the style which in itself is the best, and has the strongest claims upon our sympathy, and for its proper use we must depend upon ourselves. - SIR GILBERT SCOTT.

Our Plates.

MR. PATTEN WILSON's drawings are referred to on p. 19 of this issue.—The staircase at the Naval Barracks, Chatham, is of oak, and the panels on the first floor represent the history of ships—they were designed by Mr. S. P. Brinson in consultation with Mr. Charles W. Wyllie, and carved by Mr. T. Jago, of Pimlico. The columns shown are of marble with alabaster caps. The architect of this very refined piece of work (completed last year) was Mr. J. C. T. Murray, of the Admiralty Works Loan Department.

NAVE services in Winchester Cathedral are not of very frequent occurrence chiefly because of its great size and the incessant reverberation of sound. With a view to improving matters in this direction the Dean and Chapter have moved the fine old Jacobean pulpit, which was once in New College Chapel, Oxford, from the south side, where it has stood for some years, to the north side of the nave, just at the foot of the dais steps, and at such an angle that the preacher will face William of Wykeham's chantry. Above the pulpit is to be suspended a shell-shaped American-made sounding-board, so hung that it can be tilted at will to direct the sound of the voice in any direction.



NORTH PORCH AND PARISH ROOM, ALL HALLOWS, BARKING.

**Strengthening
Metal
Suspension
Bridge.**

THE strengthening and improvement of this structure is necessarily a slow and delicate process, and the work has now probably reached the most difficult stage. Strong steel wire ropes have been securely anchored at the bottom of the sloping tunnels cut into the rock at either end of the bridge. Passing over the towers the ropes now assist the original massive chains, fashioned by Telford eighty years ago, in sustaining the bridge platform. Rods attached to the group of wire ropes at intervals are bolted at their lower ends to the old chains, and thus bear their share in meeting the strain of the dependent fabric. The strengthening girders are now being put in position. They are being swung into place in sections, which are being riveted together. The work was commenced in the centre of the span, and the workmen have to do their adjusting and riveting while

custom ever since our Norman ancestors, after the Conquest, first introduced fonts into this country to place the font in the centre of the western end of the nave, immediately midway between these two doors. When a christening took place both doors were invariably opened, and at the sign of the Cross the Holy Spirit entered by the south door and his Satanic Majesty took a hasty departure through the north! It was for this reason that in the good old times no decent Christian cared to rest his bones in the northern portion of the churchyard—a part of God's Acre reserved, as a rule, for suicides and other such-like unfortunates.

**The Usher
Hall Plans.**

At a meeting of a sub-committee of the Lord Provost's Committee of the Edinburgh Town Council held last Wednesday, a revised design for the exterior of the Usher Hall was submitted from the city architect's depart-

subject is likely to be before the Town Council at its meeting on January 19th.

**An American
Criticism.**

REFERRING to Sir Charles A. Nicholson's recent paper on modern churches, read before the Architectural Association, the "American Architect" says:—It is unnecessary to repeat Mr. Nicholson's criticisms of the churches of Butterfield, Street, Scott, Brooks and Pearson, but it is worth noting that the best of these are uniformly distinguished by a solid and sober construction. The English Church Building Society, which refuses to aid in the erection of churches in which any sham construction is proposed, has probably done much to promote good methods of building and simplicity of design, but it is questionable whether some of its regulations, such as those refusing to sanction galleries and prescribing the dimensions of pews and passage-ways, may not have tended to produce the uni-



GATE AND PIERS, ST. ANDREW BY THE WARDROBE, QUEEN VICTORIA STREET, LONDON. BANISTER FLETCHER AND SONS, ARCHITECTS.

standing or seated upon planks directly over the river, a boat being always kept handy for the purpose of picking up any of them who may by accident fall into the water. The suspension rods from the chains and cables will be attached to the upper part of the stiffening girders, instead of to the platform as at present, and across the bottom flanges of the girders iron beams will be placed on which the roadway will rest. These beams extend on the north side of the bridge beyond the girder, and become the cantilever supports of the footway which is to be formed outside the bridge proper. Mr. J. J. Baker is the engineer.

**The Devil's
Door.**

A WRITER in the "Western Times" records that at Mullion Church, Cornwall, a devil's door exists. Mr. Harry Hems says in reference to this:—There are hundreds of old churches where these doors occur. All ecclesiastical edifices rejoicing in the possession of a south door, with a northern one immediately opposite to it, own a devil's door, i.e., the north one. It has been the

ment. The alterations on the original design had been made with the view of giving a more dignified aspect to the façade as seen from Princes Street. To this end the pillared portico in the centre had been somewhat curtailed, so as to allow of a more solid and supporting treatment of the wings; while the hall, rising high above it, had a wall head on which statuary could be set against the skyline, and a dome crowned with a lantern and figure. A feature of the new proposal is the appropriation of the portion of Castle Terrace Gardens extending from Cambridge Street to Cornwall Street for the purpose of forming a terrace in front of the hall. This would be accomplished by building a retaining wall to King's Stables Road, and filling up the sloping bank on its inner or south side to the level of Castle Terrace. The sub-committee were favourably impressed with the amended design, and instructed the Town Council to request from the city architect's department an estimate of the cost of carrying it out; probably this will be more than the original scheme, and more than the amount of Mr. Usher's gift. The

formity and formality which is nowhere more objectionable than in church design.

**Liverpool
Cathedral.**

THE Executive Committee held a meeting on January 4th, when a sub-committee was appointed to make the necessary arrangements for the laying of the foundation-stone of the cathedral. The Organization Committee submitted a pamphlet describing the edifice, which is illustrated by sketches by Mr. Bodley and Mr. Scott. Copies will be issued to subscribers, and sold to the public in due course. The diocesan surveyor was instructed to fence in so much of the site at St. James's Mount as will be required for the building of the cathedral. Nothing definite was decided upon, but it is thought that the foundation-stone may be laid in May or June. It is anticipated that their Majesties the King and Queen will attend the function, and will be entertained at Knowsley by the Earl and Countess of Derby. Shortly after the meeting had concluded it was reported that Mr. H. Douglas Horsfall (the donor of St. Agnes's Church, Ullet Road,



EAST ELEVATION.



WEST ELEVATION.



SOUTH ELEVATION.



NORTH ELEVATION.

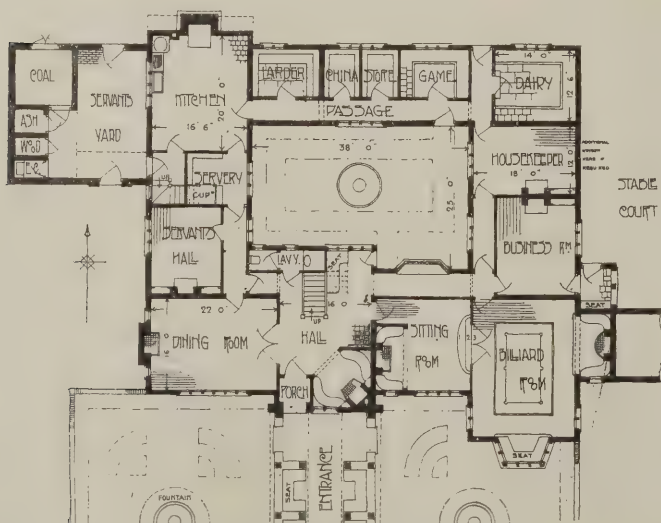
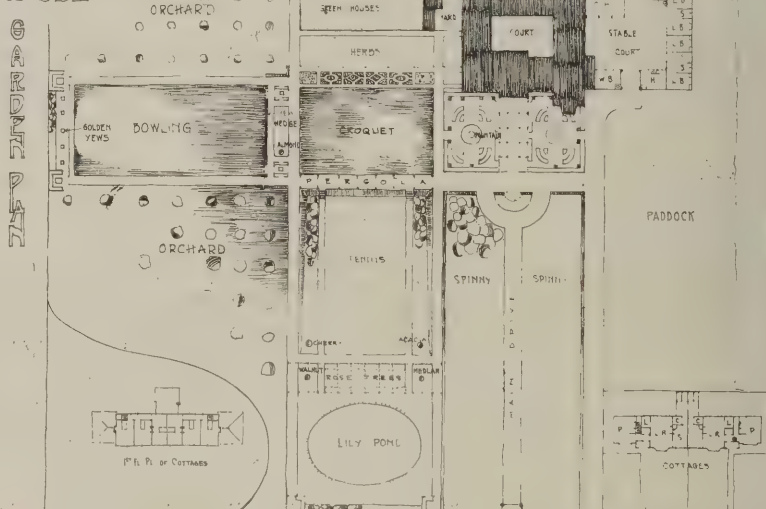
Sefton Park, and of St. Faith's Church, Great Crosby) had offered £5,000 for the provision of a reredos for the cathedral.

A Bachelor's House.

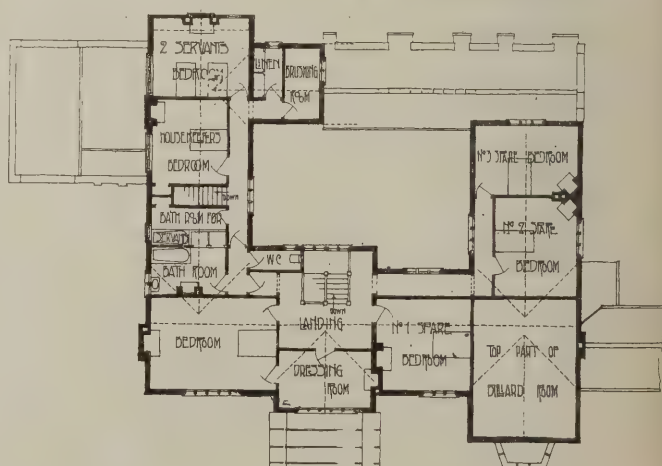
Mr. HULME sends the following particulars of this design:—The prize is given yearly by the Birmingham Architectural Association for the purpose of making a travelling sketching tour, and is for a design and set of measured drawings, but until recently has been somewhat neglected by the Associates. The subject was "A Bachelor's House in a Hunting and Shooting District." The usual hall, dining-, drawing- and billiard-rooms were required, with consideration of aspect, &c.; but particular care was to be taken in arranging the housekeeper for superintendence of kitchen premises, together with convenience for business transactions, and also for an access to business-room from stable court. It was in planning these that the chief difficulties arose. Good dairy and game were mentioned, with large kitchen; also servants' bedrooms and bath, to be cut off from remainder of house. A pair of cottages was also required, the stable planning shown and the garden laid out.

B.A.A.

DESIGN FOR BACHELOR'S HOUSE



GROUND-FLOOR PLAN.



FIRST-FLOOR PLAN.

ARCHITECTURAL ASSOCIATION.

Mr. Hugh Stannus on Egyptian Architecture.

A MEETING of the Architectural Association was held at No. 9, Conduit Street, W., last Friday evening, Mr. Henry T. Hare, president, in the chair. The minutes of the previous meeting having been read and confirmed, the following were elected members:—Messrs. Francis Goldsborough, William Arthur Whiddington and H. P. L. Cart. The president announced the following further donations to the New Premises Fund:—

	£	s.	d.
G. Alan Peache	-	-	5 5 0
L. Sargent	-	-	2 0 0
W. M. Fawcett	-	-	1 1 0

Votes of condolence were passed to the relatives of the late Mr. William Pain, who at the time of his death was acting as liquidator to the Royal Architectural Museum, and of the late Mr. Howard Dru-Drury.

Mr. Hugh Stannus, F.R.I.B.A., then delivered an interesting lecture, illustrated with numerous lantern slides from photographs, and drawings. The lecture, however, was of too discursive a character to bear reporting fully (not to mention the difficulties of taking a report with the lights down). Mr. Stannus began by explaining that Egypt was naturally divided into two countries: one consisting of the delta of the Nile and the other of the valley of the Nile, the former being called Lower Egypt and the latter Upper Egypt. In Lower Egypt, as a result of the irrigation by the very numerous channels and rivers flowing through the land, great quantities of reeds grew, and, in time, the Egyptians came to regard the papyrus as the characteristic plant of their country and used it symbolically as we did our own English rose. Upper Egypt consisted of a valley about 10 miles wide (in a few parts 15 miles wide perhaps) cut by the river during former ages, with a wilderness beyond this narrow strip of cultivation. The hilly slopes of the river were of limestone for a certain portion nearest the delta, next sandstone, and then sandstone and granite. In this upper part of Egypt the lotus plant grew, and as the season was good or bad so it increased or decreased in quantity, and thus became associated with the prosperity of the country: in this way it was the symbolical plant, used in decoration, for capitals to columns, &c. We of to-day used flowers to decorate on festive occasions, and it was only one step more that the lotus should be put in a permanent form on the capital.

In tracing the history of evolution it was important to distinguish between different countries with their surroundings and products, and in this way we saw Egypt was in reality two countries. Its architectural history might be divided naturally in several periods. In the first the materials available in the country dominated the design both in construction and decorative details. In early times the differences in the architecture of the two countries were more pronounced, and thus we found up to the XI. dynasty that there was a parallel development of the compound shaft in Lower Egypt and of the stone pier in Upper Egypt. In Lower Egypt the simple native method of building to this day was to tie a bundle of reeds together and plaster them to serve as a support for a roof, for which they were admirable. No timber grew in Egypt, but in the lower part the people were able to import some from Lebanon. Upper Egypt being a country of rocky cliffs, we found rock-cut caves and stone piers there.

In the second period the workman had conquered his material through better technical equipment, and improved carrying facilities increased variety in material and

tended to obliterate the difference between the two countries. Intercourse with neighbouring nations increased ideas. A parallel case was the Dorian and Ionian, gradually merging into United Greece. The Kings of the XI. and XII. dynasties made demands on architectural ability which were met by the architects.

In the third period we found Egypt united into one country after the Hyksos (who came from the north-east and dominated the delta part of Egypt) had been driven out. The kings then styled themselves "Neb Tauti," lord of the two lands, and the symbols of each—the papyrus and lotus—were combined. The great XVIII. dynasty in turn travelled, hunted, conquered and married with ladies of Asia, and we saw exotic designs introduced.

In the fourth period other symbolic figures were introduced, such as the Hat-hor capital of the XVIII. dynasty and Osirids of the XIX. dynasty. The fifth period, the time of the Ptolemies, was noticeable for a richness of detail, when Greek civilization had reached Egypt. The Greek mind was seen working with Greek principles on Egyptian details. Mr. Stannus explained by means of drawings and photographs the evolution of piers, pointing out that the flat portion on the side was for hieroglyphics, to run down. The form of columns was traced from bundles of reeds tied together, the imitation of a plant being pointed out in the bulging at the base. Mr. Stannus here explained that he had been trying to work out the proportions of the columns in the best period and he had found that the parts arranged themselves according to a system of inscribed squares and circles in alternate succession.

In explanation of the fact that the capitals did not project beyond the columns he said that the columns were monoliths and were probably first made quite cylindrical, so that they might be easily transported by rolling, and were then worked on the site. He showed a photograph of a pilaster or respond in one temple. The palm or Mesopotamian capital introduced by Thotmes III. he thought was a conventionalized representation of the upright leaves and the pendant leaves of a palm tree with the row of dates between shown by the row of beads on the capital. He concluded with an explanation of the lighting of the temples by clearstories.

Mr. R. Phené Spiers proposed a vote of thanks, which was seconded by Prof. R. Elsey Smith. Mr. J. D. Crace next spoke. Mr. Ronald P. Jones referred to the complete contrast between Egyptian and the Classic styles, though based on the same principles of construction, and gave as an explanation that the Egyptian temples were designed to keep the people out (the religious services being confined to the priesthood), and therefore consisted on the outside of blank walls, whereas the Greek and Roman temples were designed for outward effect, the religious services for the general public being held outside. Mr. Arnold Mitchell and Mr. Hare also spoke, and Mr. Stannus replied.

DRAWINGS OF ARCHITECTURE.

SIR CHARLES A. NICHOLSON'S drawing, reproduced in the centre plates this week, is a beautiful example of his water-colour work. Its powerful draughtsmanship will charm everyone. Mr. Patten Wilson's drawings of stage architecture show the peculiar methods he so skilfully adopts. The effect tends towards impressionism, yet everything is very carefully drawn. The original of the guard-room in the ruined castle of Randegg is drawn in pencil on a brown tinted paper, the high lights being picked out in white chalk.

Correspondence.

Building Construction Classes in Glasgow.

To the Editor of THE BUILDERS' JOURNAL.

GLASGOW.

SIR,—On p. 293 of your issue for December 30th, in reviewing the events of the year, it is stated that "at Glasgow arrangements were made between the School Board and the Institute of Architects for the proper teaching of architecture in the Board schools." This is an error. What has taken place is that a joint committee of representatives of the Glasgow and West of Scotland Technical College and of the School Boards of Glasgow and Govan have met and agreed upon a scheme whereby elementary building construction is now being taught in the Board schools on a syllabus specially arranged for Scottish students, which has been accepted by the governors of the College and by the members of the School Boards concerned, while advanced study in the subject is now taken up in the Technical College only.—Yours truly, CHARLES GOURLAY.

Photo-Copies of Drawings.

To the Editor of THE BUILDERS' JOURNAL.

LONDON, W.

SIR,—With reference to the remarks of Mr. Thorp in regard to the paper on "Photography for Architects" read by Mr. Francis R. Taylor before the Architectural Association, I should like to point out that for some years I have had my drawings photographed by a process which I consider "permanent," namely, Messrs. Norton & Gregory's "Black Line" process. I may say that by this process the copies are of such excellence that in more than one case they have been taken for original drawings by architect friends of mine. Any colour can be put on without fear of the lines smudging. I have tried several "Black Line" processes, but all of them have fallen short of the standard of Messrs. Norton & Gregory's. It is only fair for me to say that I have not had any photocopies done by Mr. Thorp's process, as, having found a good thing, I rather prefer to stick to it.—Yours truly,

JOHN WORNELL, JNR.

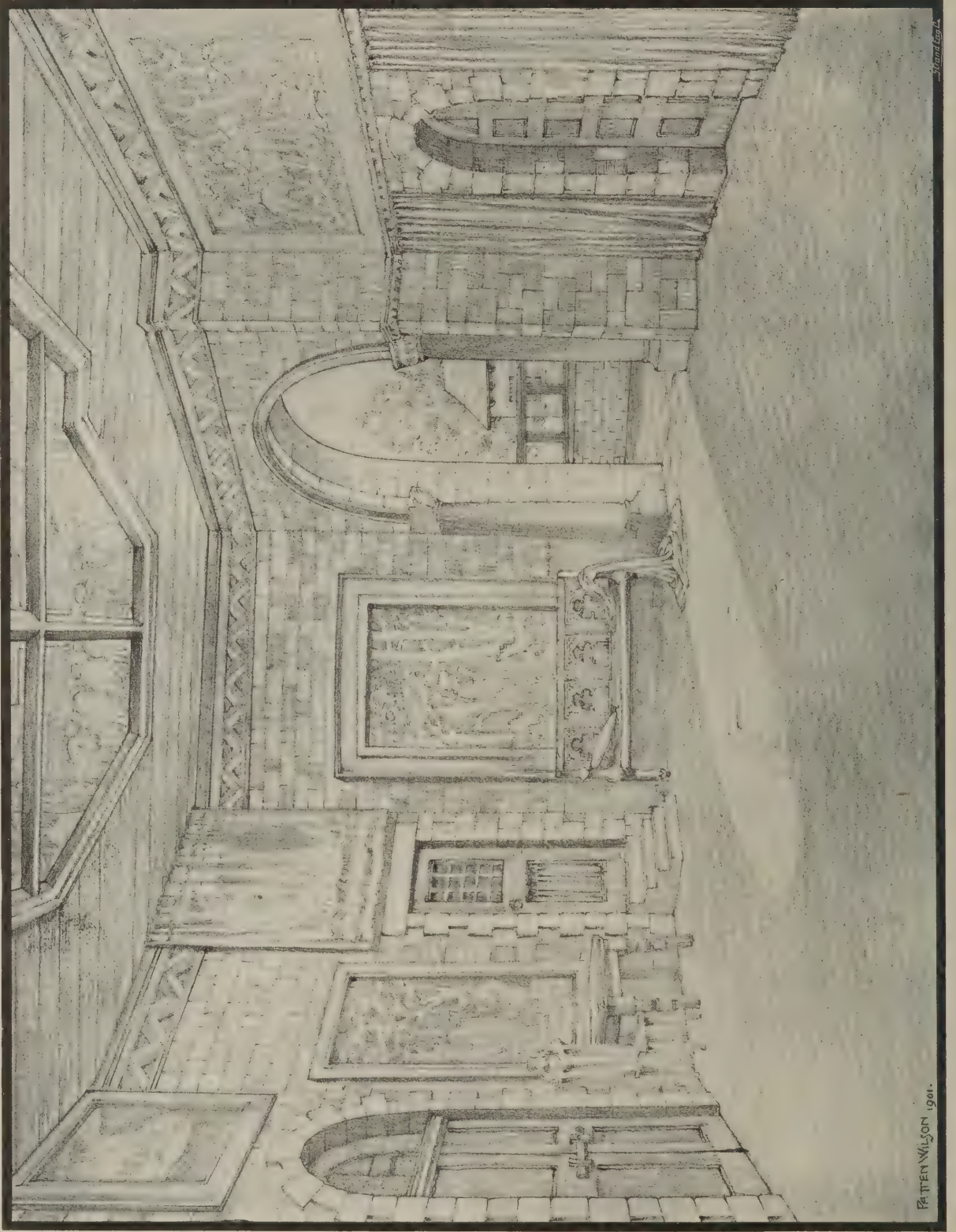
Plympton Grammar School.

To the Editor of THE BUILDERS' JOURNAL.

LONDON, S.W.

SIR,—I am very glad to see by your issue for last week that you are interested in the question of the rumoured demolition of Plympton Grammar School. Had any such thing taken place it would have been a lasting disgrace not only to Devonians but to every Englishman professing a love for his country and its traditions. The building, as you justly remark, is unique and architecturally contains some good typical West-country detail; but putting the question of design upon one side, it should be dear to all Englishmen for the simple reason that in the old rectory house (now demolished) adjoining the school Sir Joshua Reynolds was born, and within the school walls he received his education from his father, the headmaster. The school register can also boast of having tutored such men as Sir Charles Eastlake and Benjamin Haydon, and many other well-known Devonians. I am glad to learn from Dr. Aldridge, of Plympton, that the governors (of which he is one) have never thought of demolishing the school, so that we may rest assured that the building is to remain, let us hope, intact. It is to be let for scholastic purposes, but I would venture to suggest that the various societies founded for the protection of such works do see that this building receives no injury in the future.—Yours truly,

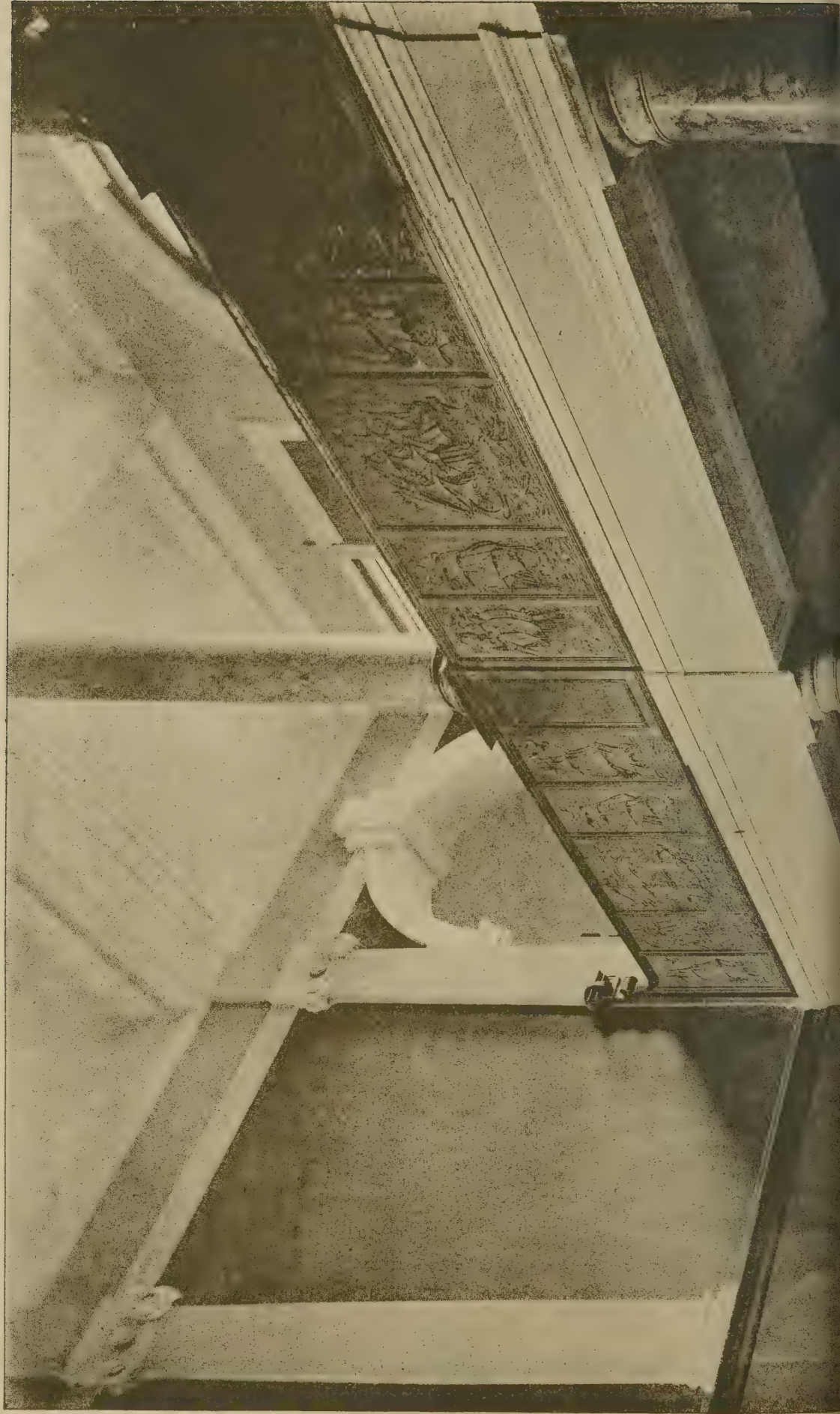
ARTHUR H. RYAN-TENISON, F.R.I.B.A.
and head-boy 1879, 1880, 1881.

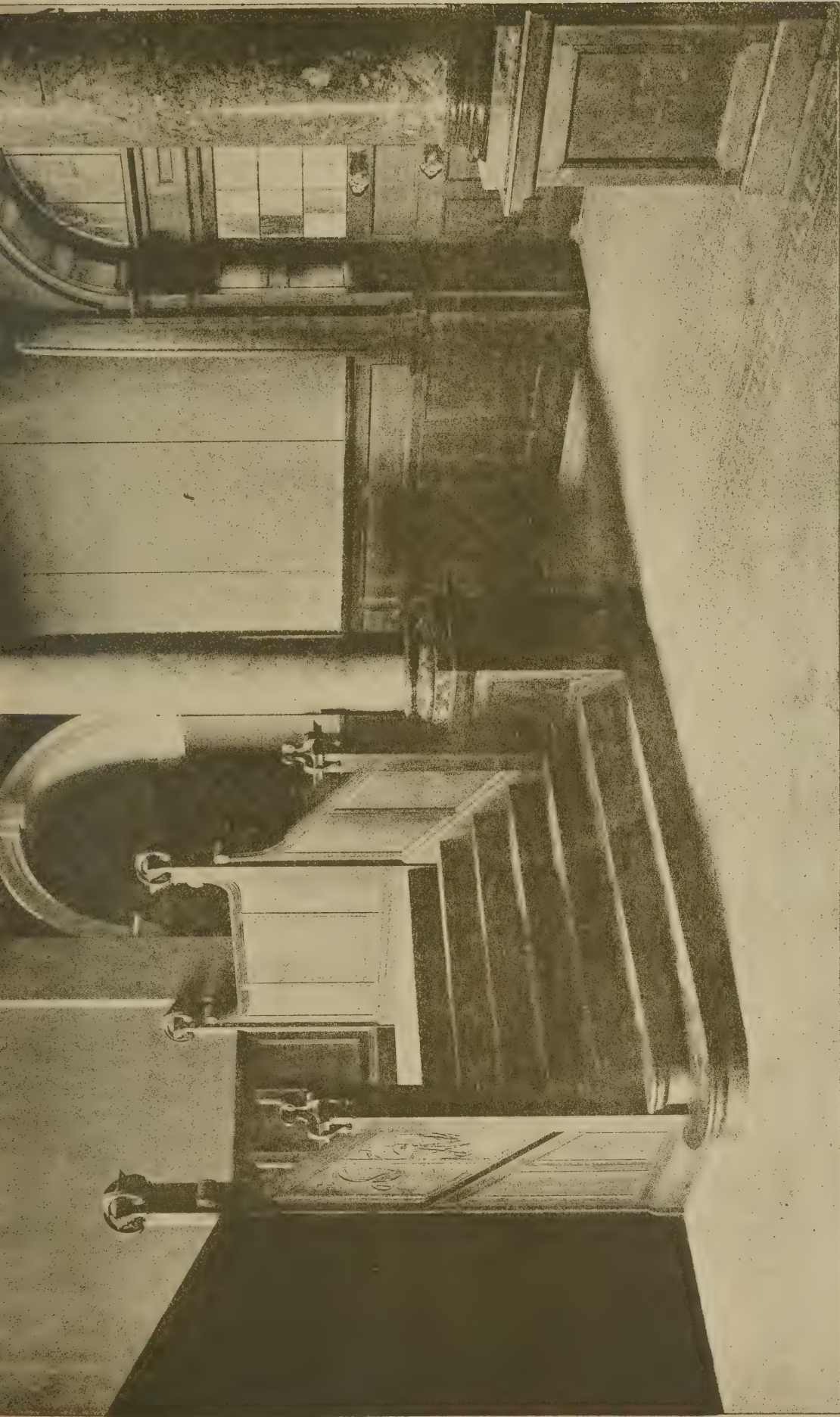


DRAWINGS OF ARCHITECTURE: THE LADIES' BOWER IN THE CASTLE OF AUDLAN ("THE SWASH-BUCKLER"), BY PATTEN WILSON.

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*Supplement to
THE BUILDERS' JOURNAL AND ARCHITECTURAL RECORD,
Wednesday, January 13th, 1904.*



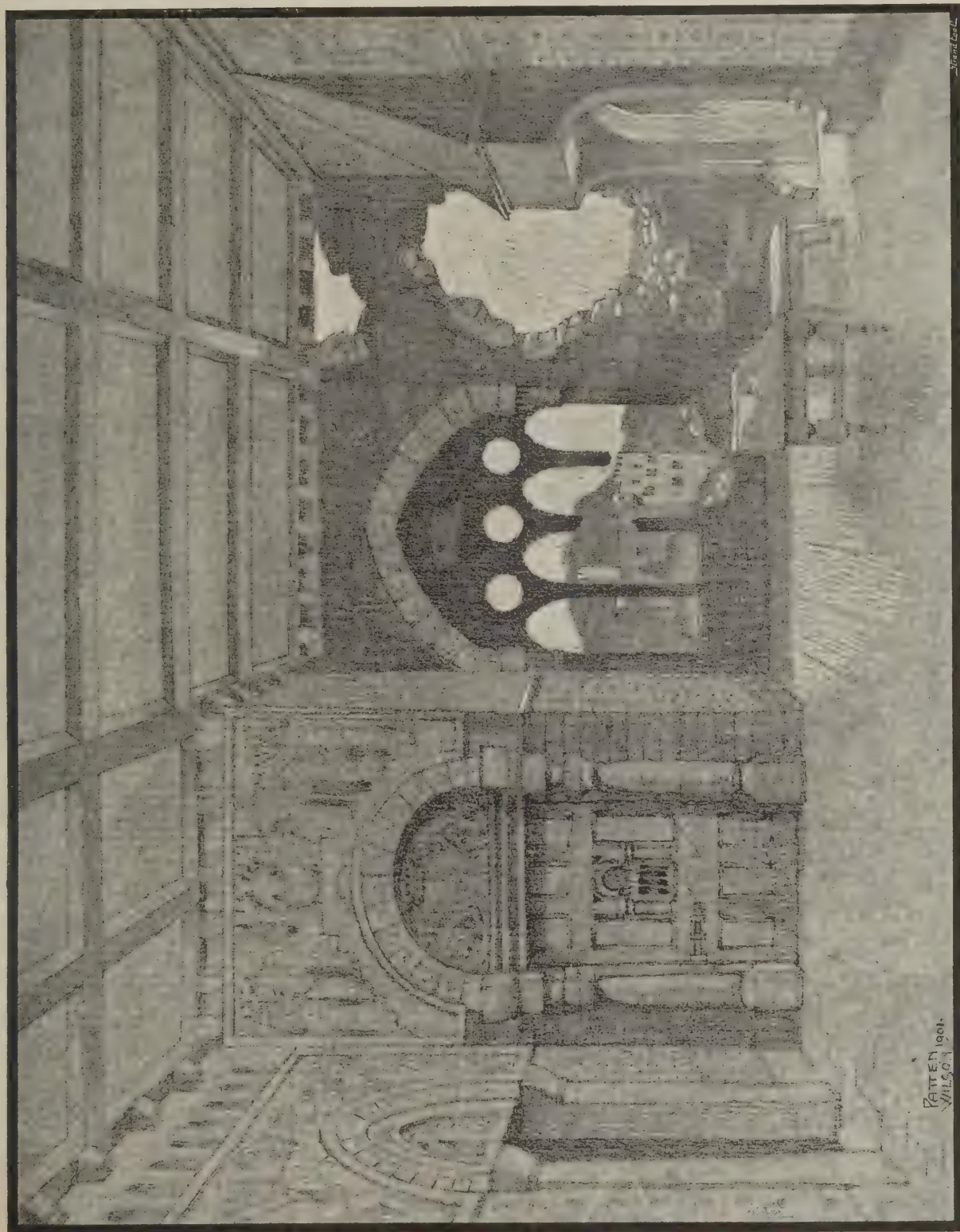


PHOTOGRAPH BY S. B. BOLAS & CO

INK-PHOTO. R. V. EVERETT & SONS, 56 LUDGATE HILL, LONDON, E.C.

CHATHAM NAVAL BARRACKS: STAIRCASE, OFFICERS' MESS. J. CAMPBELL TURNER MURRAY, ARCHITECT.

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DRAWINGS OF ARCHITECTURE: THE GUARD-ROOM IN THE RUINED CASTLE OF RANDEGG ("THE SWASH-BUCKLER"), BY PATTEN WILSON.

Builders' Notes.

Notice of Removal.—Messrs. Manlove, Alliott & Co., Ltd., engineers, have moved from Gracechurch Street to 41 and 42, Parliament Street, Westminster.

Messrs. Farrow & Jackson, Ltd., wine and spirit merchants' engineers, of 16, Great Tower Street, E.C., and 8, Haymarket, London, will take over the old-established business of Macord & Arch, makers of wine-bins and cellar fittings, as from January 31st next.

Boiler Explosions.—The Board of Trade report states that during the year ended June 30th last there were 69 boiler explosions, 23 of which were due to deterioration or corrosion and 17 to the ignorance or neglect of attendants.

The Preston, Fulwood and Longridge Joint Isolation Hospital is being ventilated by means of Shorland's patent exhaust roof ventilators, special inlet tubes and under-bed ventilators, supplied by Messrs. E. H. Shorland and Brother, of Manchester.

Mr. J. Carmichael, builder and contractor, of Trinity Road, Wandsworth Common, has asked us to state that the Mr. Carmichael who was recently fined £2 at the Westminster Police Court for travelling without a railway ticket is not and never has been in any way connected with his firm.

The Leeds Fireclay Co., Ltd.—Mr. A. Barrett, who has been secretary to the company for fourteen years, has been appointed managing director and deputy chairman. Mr. B. J. W. Lone, who has been one of the company's managers in London for many years, has been elected a director and appointed to control the Sales' Department in London and the South. Mr. H. J. Boot, for several years Mr. Barrett's assistant, has been appointed secretary of the company.

Breaches of the Building By-laws at Southport.—During the past few months the borough surveyor's department at Southport has been making a house-to-house visitation in certain districts with the object of seeing whether the building by-laws had been complied with. In some places flagrant acts of non-compliance were discovered. Whole yards have been found covered with sheds and outhouses which have never come before the Highways Committee.

Decorative Painting: New School opened in Manchester.—A new school of decorative painting, formed under the auspices of the National Association of Master House-Painters and Decorators of England and Wales, was opened on January 5th at 69a, Market Street, Manchester. It has been established with a view to meet the needs of young men desirous of perfecting their training in decorative painting, and students will be received from all parts of the kingdom. Although the session proper does not commence until next October, a number of students have already been enrolled upon the list. Fees have been fixed as low as possible, and colours and material will be supplied free of cost. In conjunction with the new master (Mr. E. A. Bramley, late master of one of the London technical schools) the institution will be managed by a committee appointed by the Association, and as the desire is not to make a profit there is every prospect of a successful future before it.

Messrs. Kirk & Randall and Sir Charles Wyndham.—An arbitration enquiry was commenced on January 5th at the Surveyors' Institution, Westminster, the claimants being Messrs. Kirk & Randall, building contractors, of Woolwich, and the defendant Sir Charles Wyndham, the proceedings having reference to the erection of the New Theatre, St. Martin's Lane, the architect of which is Mr. Sprague. The building was begun in 1902 and finished

at the beginning of last year. Disputes arose between the contracting parties, and Sir Charles Wyndham took possession of the building in December, 1902, and had the work completed. Law proceedings then arose, and were pending during last year, and it was finally decided that all matters in dispute should be referred to Mr. H. T. Steward as arbitrator. The claim was for moneys not paid and for wrongful ejection from the building, and there were counter-claims having reference to the completion of the theatre and to the work not having been completed within the contract time. The proceedings were held in private.

Keystones.

Mr. Frank Dicksee, R.A., has been elected an honorary associate R.I.B.A.

A Fire-Station at the top of Highgate Hill is urged as being very necessary.

The Norman Church of St. Mary at Kingsclere is proposed to be restored.

Mr. A. H. Skipworth has been ordered away for six months by his doctor.

Cardiff Town Hall is proposed to be converted into a theatre. It is hoped that the old frontage to the High Street will be retained unaltered.

Architects' Registration.—A committee consisting of the Council of the R.I.B.A. and representatives of the allied societies has been appointed to consider the principle of architects' registration.

Rowton House for Camden Town.—Camden Town is to have the largest "poor man's hotel" in the country. The Rowton Houses Co. has acquired a site on which it is intended to erect a building to contain 1,200 cubicles.

Toledo Cathedral.—On December 2nd last part of the vaulting of the choir collapsed. The chapter is undertaking the rebuilding of it, but the whole edifice is in a condition so unstable that grave fears are expressed as to the possibility of maintaining it.

The Siamese Exhibit at the St. Louis Exhibition will be displayed in a pavilion which is to be an exact copy of a new royal temple now being erected in the latest addition to the many palaces of the King near Bangkok.

Light and Air.—At the present time three great building enterprises in London are stopped by the operation of legal injunctions on account of light and air—Waring's new premises in Oxford Street, the Savoy Hotel and the Walsingham House Hotel.

New Fellows of the R.I.B.A.—Mr. P. Morley Horder (London), Mr. A. Paul MacAlister (Cambridge), Mr. T. Ridley Milburn and Mr. W. Milburn (Sunderland), and Mr. A. E. Perkins (London) have been elected Fellows of the Royal Institute of British Architects.

Towards the repair of Waltham Abbey Church Tower, which has for some time been in an unsatisfactory condition, subscriptions amounting to about £1,100 have been received or promised. The proposal is to re-face the tower and rebuild the parapet with pinnacles at the corners, which work is estimated to cost about £2,000.

The Edinburgh Museum of Science and Art in Chambers Street, in which the electric light was recently introduced, has now been re-painted and decorated, practically for the first time since it was opened forty years ago. The work has been executed by Mr. James Clark, of Edinburgh, under the direction of His Majesty's Board of Works. It has taken about sixteen months to accomplish and has been done without accident to workmen or exhibits.

Birmingham's New Art Gallery.—The site for this building at the corner of Edmund Street and Congreve Street has to be cleared by Lady Day next.

Royal Exchange Assurance Corporation.—Mr. Henry Frederic Tiarks has resigned the governorship of this Corporation, and Mr. A. Dutton has been appointed underwriter in place of Mr. Toulmin, resigned.

Memorial to Lord Salisbury.—The memorial window to the Marquis of Salisbury is to be publicly unveiled in the church of St. Peter, Newlyn, Mount's Bay, Cornwall at the end of this month.

Kensington Palace Grounds, contiguous to the Palace, are in the hands of the builder. On the west side of the roadway seven plots have been mapped out for the erection of mansions, each building having a frontage of about 50 yds. The plane trees in front of the land will not be cut down. The first mansion is now in course of construction.

The R.I.B.A. Student Drawings will be on exhibition at the Alpine Club (entrance from Mill Street, Conduit Street, W.) from Tuesday next, January 19th, till (and including) Saturday, January 30th, from 10 to 8. The following sets have been sent in:—Soane, 1; Owen Jones, 5; Pugin, 3; Godwin Burslem, 2; Tite, 11; Institute Silver Medal, 1; Arthur Cates, 4; Grissell, 14. The prize will be presented on February 1st, when the name of the proposed recipient of the Royal Gold Medal will be announced (members wishing to suggest names for the consideration of the Council should do so in writing to the secretary before January 18th).

Proposed International Exhibition for Dublin, 1906.—In their scheme for this exhibition Mr. G. C. Ashlin, president of the R.I.A., and Mr. J. H. Ryan, president of the Institute of Civil Engineers, Ireland, suggest that the buildings be mainly of wood, with the external elevations covered with fibrous plaster, as in other recent exhibitions. For the Fine Art Gallery and Loan Collection, which would require to be of fireproof construction, they suggest breeze-concrete or steel stanchions for the walls and a steel construction for the roofs. The principal roof and dome of the main exhibition building would also probably require steel trusses and stanchions. The cost of the buildings and outworks is estimated at £150,000.

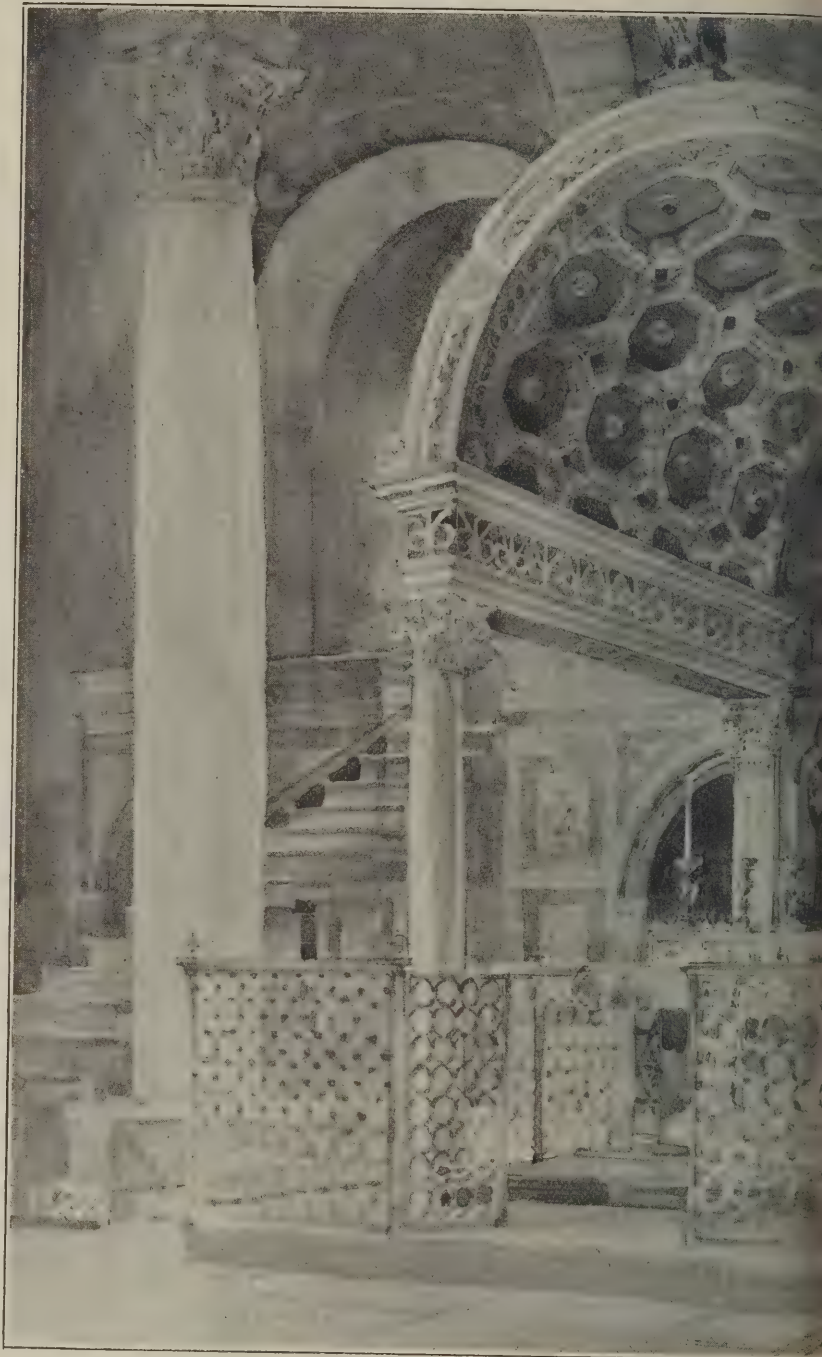
Obituary.

Mr. John Hatton, a master-builder of St. Helens, recently died from injuries received by being thrown out of a cart. He was drunk at the time of the accident.

Mr. J. B. Hardman, head of the firm Messrs. John Hardman & Co., stained-glass artists, Birmingham and London, left estate which has been valued at £27,424 gross with nett personalty amounting to £23,355.

Mr. Howard Dru-Drury, architect, aged 27, living in Blackheath, and in business at Queen Anne's Gate, left home on Monday night, January 4th, for a walk, nothing further being seen of him until his body was found on the South-Eastern Railway line between Blackheath and Charlton at midnight. His dog, which had accompanied him, was standing by the body, and attacked a ganger who tried to approach it. There was no evidence to show how he came to the line, and his father, who is district surveyor for Westminster, said his son had always seemed quite cheerful, and had never threatened to take his life. There were found on the body several photographs of a lady and an unfinished note. The jury returned a verdict of accidental death, and expressed the opinion that the railway company should make safe the place where the body was found.

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DRAWINGS OF ARCHITECTURE: ALTAR IN NAVE S. I.



MONTE, FLORENCE, BY SIR CHARLES A. NICHOLSON.

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THE BUILDING TRADES DURING 1903.

Additional Reports.

THE following reports on the building trades are additional to those given in our issue for last week:—

Bradford.

The building trade at Bradford during the past year was comparatively flat as regards new contracts. A number of large contracts let in 1902 were carried on through the greater part of 1903, and some are not yet finished. But for these the trade would have been deplorable. Prices for contract work have materially declined. Labour was plentiful, except, perhaps, as to plasterers, whose strike interfered more or less with some buildings.

Works commenced in 1902 and completed or nearing completion in 1903 were—the Dawson Place Markets; the Electricity Works, Talley Road; the Central Baths, Morley Street; the District Baths, Drummond Road; Lapage Street Board School, Grange Road Board School, Wyke Board School, Eastbrook Mission Hall and the Cartwright Memorial Hall, which was commenced in 1900. House-builders were very busy, notwithstanding the fact that so many houses remain unlet. The local stone trade was fairly good in 1903, and prices were firm at about the rates of 1902. The London tooled flag trade was not so good in 1903, while the provincial trade was only moderate, with prices somewhat easier.

Belfast.

The building trade during 1903 was somewhat uneventful. One contract, however, attracted a considerable amount of attention, namely, the new Royal Victoria Hospital, on account of its having been opened by his Majesty the King.

The new City Hall is slowly attaining very stately dimensions, so that even the forest of scaffolding that covers its elevations fails to disguise the beauty of its classic outlines. Within the vicinity of the City Hall some other important buildings have been completed, these including the Scottish Provident Buildings and the new branch of the Northern Banking Co. in Donegall Square West, and the Ocean Buildings, on the other side of the City Hall.

In College Square the new municipal technical institute is gradually assuming shape. Further up Great Victoria Street are two large warehouses—one at the corner of Howard Street for Messrs. Fulton & Co., the other at the corner of Hope Street for Messrs. Black & Co. At the other corner of Howard Street the new Assembly Hall is being rapidly pushed forward towards completion. In Wellington Place new offices for the Norwich Union Fire Insurance Co. are being erected. The new Cathedral in Donegall Street is assuming a more finished appearance. Making allowance for the fact that building of small-house property has fallen off considerably during the last few years, as a whole the building trade during 1903 was fairly satisfactory.

The Timber Trade.

The timber trade, in common with most other trades, felt the year just closed to be one of real strain and anxiety. With a few exceptions, such as teak, mahogany and Quebec goods, the imports have been more than ample to fill the dull demand, and want of confidence in the prospects of trade has effectually killed all the briskness and ready marketing of well-bought goods, which go to make "good business." F.O.B. prices have been resolutely maintained by both shippers of hard and soft woods, but the choice of keeping out of the market, or submitting to a cost which has left little or no room for a working profit, has borne hardly on the merchant and dealer who may have



ST. THOMAS'S CHURCH, BRAMPTON, CHESTERFIELD: DECORATION SCHEME BY COLE A. ADAMS, F.R.I.B.A.

no reserve of profit to fall back upon. There have not been wanting signs that the profits of the five good trade years which ended in 1900 have been exhausted, and the restriction of banking facilities must painfully accentuate to many the feeling of business stress and political apprehension with which the New Year opened for the majority of thoughtful traders.

That Russia, the chief source of our wood supply, may be involved in a war of doubtful duration, is calculated to give rise to pregnant forebodings as to the obstacles, or at any rate the practical inconveniences, that may attend the shipment of wood, even though we ourselves should not become actively involved and the seat of operations be in fact confined to the Far East. Again, the new fiscal proposals may possibly acquire a very practical interest for us before the present year has passed. That a preferential tax on wood is quite within the realm of probability may be inferred from the fact that a general tax on wood was suggested in connection with the Budget proposals of 1902. The only question for practical consideration is whether the consequential rise in general wood prices and the tendency of Colonial wood shipments here to increase at the expense of the Russian and Scandinavian productions are, or are not, conducive to the best interests of the wood trade.

Decoration of St. Thomas's Church, Bampton, Chesterfield.—This church has recently been altered and decorated throughout, the west gallery removed and new west arches substituted, opening into the tower, which, on the ground floor, has been converted into the baptistery. Other alterations have also been made. The scheme of colour throughout is a strong one, there being plenty of light from the windows, which have been re-glazed. The photograph fails in giving the values of the various colours,

but otherwise fairly represents the general effect. In the ceiling of the nave are mottoes in the panels with St. Thomas's confession of faith, and his monogram, together with the sacred ones. The nave cornices have angels bearing shields with the emblems of the Passion. The work was carried out by Mr. J. Fidler, of Sheffield. The decoration is mainly in "Duresco," and was executed under the guidance of Mr. P. J. Bartlett. Mr. Cole A. Adams, F.R.I.B.A., Westminster, was the architect.

Enquiries Answered.

The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Mayor's Serving-Room.

OLD NORMANTON.—SPES writes: "What is the purpose of the mayor's serving-room in municipal buildings?"

Surely you know that mayors and councillors are fond of lunches and private banquets.

Open Space at Rear of Building.

CARDIFF.—OMEGA writes: "Is a 'lock-up shop' a building of the warehouse class or a domestic building? I wish to know this because an urban district council have disapproved a plan of mine showing an extension to a lock-up shop (no portion of which is used for living purposes) so as to cover the whole area of the site. The council state that the plan was disapproved because no open space was provided at the rear, as required by the by-laws. Their by-laws are the same as the L.G.B. The clause relating

to open spaces at the rear of new buildings reads: "Every person who shall erect a new domestic building shall provide in the rear of such building an open space of not less than 150 sq. ft." There is no mention of an open space at the rear of a building of the warehouse class."

A lock-up shop comes under the designation of a "domestic building." The Local Government Board's definitions run as follows: "Domestic building" means a dwelling house or an office building, or other out-building appurtenant to a dwelling-house, whether attached thereto or not, or a shop, or any other building not being a public building or of the warehouse class. "Building of the warehouse class" means a warehouse, factory, manufactory, brewery or distillery." Probably you will find these definitions are incorporated in your urban district council's by-laws under the heading of "interpretation of terms."

F. S. I.

Footings.

MANCHESTER.—CAPSTAN writes: "I am about to erect a house on a plot of land 25ft. wide. At present there are no buildings on either side. Can I put in the footings stepped inwards on my own property?—otherwise I shall have to lose $4\frac{1}{2}$ in., as the adjoining owner will not meet us on the matter."

There is no structural objection to footings built as you propose, and I know of no reason why you should not build right up to your client's boundary line. Of course, precautions must be taken to have no projection beyond that boundary in any part of the building; for instance, spouting, or the very usual overhanging rafter to the roof.

F. S. I.

Civil Engineers' Examination.

BLACKPOOL.—C. W. writes: "Where can I obtain full information in connection with the A.M.I.C.E. examinations?"

From the Secretary, Institution of Civil Engineers, Great George Street, Westminster.

Shortage in Quantities.

LONDON.—PLUTO writes: "If quantities form part of the contract, can a contractor claim for shortage in them?"

Yes; that is the object of including them.

Damp-course in Stack.

LEYTONSTONE.—H. G. writes: "In an exposed position I wish to put a damp-course through the chimney stack between the rafters and the ceiling joists, but do not like a lead course as it interferes with the adhesion of the cement. Would slate in cement perish by the action of the soot, and if so would a course of blue Staffordshire bricks be sufficient to arrest the soakage of rain down the stack?"

Blue Staffordshire bricks laid in cement would be sufficient, but there is no objection to using slate on the score of its being in connection with the soot.

Fee for Drawings prepared but not carried out.

COVENTRY.—CONSTANT READER writes: "I am instructed to prepare plans, elevations, &c., for a pair of semi-detached houses, and am so bartered down that I agree to do this and also supervise the erection of the houses for £20. The houses would cost between £350 and £400 each. My clients have now decided not to build. What reasonable amount should I ask, keeping in mind the £20, for the work I have done, namely, preparing and finishing detail plans, elevations, &c., ready for the builder to give an estimate, making tracings of the same for the approval of the Corporation and for the builder to work to, and all complete specifications?"

We consider you are entitled to be paid £15, and the drawings, &c., are then the property of your clients.



HOUSE AT SHENFIELD, ESSEX.

ROBERT H. BROWNE, ARCHITECT.

Building Materials around Torquay.

OLD NORMANTON.—SPES writes: "Which is the more plentiful round about Torquay—brick or stone? Kindly name a good quarry and a good make of bricks."

A very soft local red sandstone is used largely in Torquay and neighbourhood, but it is not very suitable. You might apply to Messrs. H. T. Jenkins & Son, 132, Union Street, Torquay, quarryowners. Bricks and terra-cotta are also largely used, and you might apply to Messrs. Brewer Brothers, of Newton Road, and the Torquay and Terra-Cotta Co., Ltd., Hele Cross, both of Torquay; or the bricks, tiles, &c., of Messrs. Condy & Co., Ltd., of Heathfield Station, Newton Abbot, are noted for good quality.

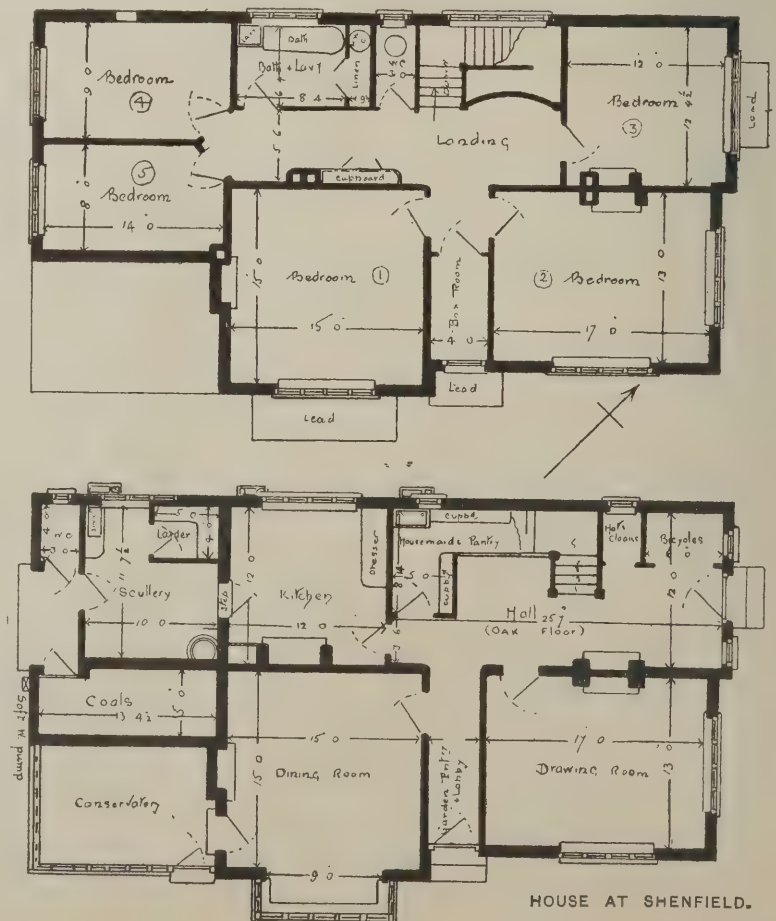
Roof Calculations.

WOKING.—READER writes: "Kindly inform me how to calculate mathematically the proportions of the total weight borne by the

various members of the iron roof-truss shown by the accompanying tracing (not reproduced)."

We cannot keep answering over and over again such elementary questions as this. Learn the principles of graphic statics from our articles on Building Construction which appeared in Vols. 14, 15, 16 and 17.

House at Shenfield.—This house is built of red brick and white plaster (locally known as "marten's nesting"), with hand-made red tiles on the roof. The interior is quite plain—distempered walls, white joinery, and without ceiling cornices. The total cost was £900. The architect is Mr. Robert H. Browne, of Tower House, High Street, Brentwood. The builder was Mr. E. Disc, of Brentwood. The gardens, tennis lawn and croquet lawns, together with all fruit trees and shrubs, were laid out by Mr. T. Webster, of Stock, Essex.



HOUSE AT SHENFIELD.

Tenders.

Information from accredited sources should be sent to "The Editor" at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Addressed postcards on which lists of tenders may be stated will be sent post free on application to the Manager, BUILDERS' JOURNAL, 6, Great New Street, Fetter Lane, E.C.

Bath.—For the erection of new cabinet works at Werton, for Messrs W. & T. Lock. Mr. F. W. Gardiner, architect and surveyor, Barton Street, Bath. Quantities by Messrs. Amor & Underwood, 7, Northumberland Buildings, Bath:—

F. Amery	£2,840 0
F. Parsons	2,798 0
W. Webb	2,777 0
J. Long & Sons	2,777 0
A. Willis & Son	2,720 0
Erwood & Morris	2,689 0
Hayward & Wooster	2,666 0
E. Chancellor & Sons	2,560 0
F. J. Blackmore*	2,465 10

* Accepted.

Beeston (Notts).—For the erection of a pair of villas, for Mr. H. A. Price. Mr. C. Nelson Holloway, architect and surveyor, Newcastle Chambers, Angel Row, Nottingham:—

J. Hutchinson & Son	£753
W. Fletcher	750
Green & Sons	669
W. Turner	630
T. Woolston*	620

* Accepted.

Beeston (Notts).—Accepted for alterations to house. Mr. C. Nelson Holloway, architect and surveyor, Newcastle Chambers, Angel Row, Nottingham:—

W. Fletcher £152

Burnley.—For the construction of two sewage tanks at the Altham sewage works, &c., for the Corporation. Mr. G. H. Pickles, A.M.I.C.E., Town Hall, Burnley:—

J. H. Heap	£2,765 8 9
Executors of H. Broadley	2,323 5 10
M. & J. W. Heap	2,068 5 8
J. & G. Dubury	2,062 2 10
G. Hunter	1,916 3 6
Clegg Brothers	1,884 15 0
T. Smith,* Burnley	1,720 0 0

* Accepted.

Bury (Lancs).—For the construction and completion of the new hospital at the workhouse, Jericho, Bury, for the Guardians. Mr. Alfred Hopkinson, architect, 15, Agar Street, Bury. Quantities by the architect:—

Contract No. 1.

C. Bindy	£21,539
J. Inman	21,200
J. Tinline	20,750
J. Byrom*	20,699

Contract No. 2.

C. Bindy	£10,756
J. Inman	10,715
J. Byrom*	10,440
J. Tinline	10,420

[All of Bury.] Note.—Nine other tenders.

* Accepted.

Farnham.—For the erection of new separation wards at the workhouse, for the Guardians. Messrs. Friend & Lloyd, architects, Grosvenor Road, Aldershot. Quantities by Mr. J. H. Hendry, Farnham, Surrey:—

P. J. Caesar, Hale	£2,510
Martin, Wells & Co., Aldershot	2,490
E. Garland, Aldershot	2,369
A. G. Mardon, Farnham	2,345
Mitchell Brothers, Shalford	2,345
Mussellwhite & Sapp, Basingstoke	2,324
A. Chuter, Farnham	2,289
W. Smith, Farnborough	2,260
Ferguson & Co., London	2,255
Tompsett & Co., Farnham	2,250
J. Harris, Basingstoke	2,200
Crosby & Co., Farnham	2,171
F. Knight, Aldershot	2,099
Bateman & Sons, Ash	2,080
G. Kemp,* Aldershot	2,045

* Accepted. [Architect's estimate, £2,123.]

Horsham (Sussex).—For the erection of stabling, sheds, mortuary, boundary wall, &c., on their land adjoining Stanley Street, Horsham, for the Horsham J.D.C. Mr. R. Renwick, surveyor:—

W. Roberts, Croydon	£2,622
Peerless-Dennis & Co., Eastbourne	2,146
Box & Turner, Ardingly	2,015
Hillman & Murrell	2,009
J. G. Pickard, Turner's Hill	1,880
G. Potter	1,795
H. Lindfield & Son	1,693
W. Potter*	1,680

* Accepted. [Rest of Horsham.]

Lichfield.—For alterations to premises, 14, Market Street, for the International Tea Co.'s Stores, Ltd. Messrs. George Baines, F.R.I.B.A., & R. Palmer Baines, architects, 5, Clement's Inn, Strand, London, W.C.:—

W. H. Lascelles & Co.	£828 0
W. H. Maxey & Son	805 0
Coulson & Lofis	655 16
T. Walmesley	592 6
Mawer Brothers,* Louth	575 0

* Accepted.

London, E.—For the erection of a warehouse on the east quay of the Regent's Canal Dock, for the Regent's Canal and Dock Co. Plans, &c., by Messrs. Thomas & Thomas, architects, 191, Edgware Road, Paddington, W.:—

Perry & Co.	£3,131
Bull & Radalle	2,900
W. Gladding	2,871
J. R. Ward	2,773
Richards & Co.	2,749
Kirk & Randall	2,744
Fatman & Fotheringham	2,679
Watts, Johnson & Co.	2,648
Chessum & Sons	2,634
G. Godson & Sons	2,596
Sheffield Brothers*	2,595

* Accepted.

London, S.W.—For the construction of new roads and sewers on Lord Westbury's Putney Hill Estate. Mr. J. C. Radford, A.M.I.C.E., engineer and surveyor, 163, Upper Richmond Road, Putney:—

T. Kavanagh & Co.	£9,960
B. Nowell & Co.	9,865
J. Mears	9,780
W. R. Williams	9,743
E. Parry & Co.*	9,561

* Accepted.

Maldon.—For Tolleshunt Knights water supply works, for the R.D.C. Mr. Horace G. Keywood, C.E., water engineer, Maldon, Essex:—

Contract No. 1.—For supply of cast-iron pipes.

	4in.	6in.	8in.
The Sheepbridge Coal and Iron Co.* Ltd.	£5 8 6	£5 11 0	
The Staveley Coal and Iron Co. Ltd.	5 10 0	5 10 0	
John Abbot & Co., Ltd., London	5 10 0	5 12 6	
The Clay Cross Iron and Coal Co.	5 10 10	5 12 6	
Cochrane & Co., Ltd.	5 11 3	5 15 0	
J. & S. Roberts, Ltd., West Bromwich	5 12 6	5 12 6	
The Birtley Iron Co., Birtley	5 13 6	5 13 6	
Ortwell & Son, Maldon	5 14 11	5 14 11	
The Stanton Iron Works Co. Ltd.	5 15 0	5 17 6	
Henry Whyte, Tipton	5 17 6	6 0 0	
Cochrane & Co., Dudley	5 17 6	6 2 6	
Davies, Ball & Co., Ashstead	6 0 0	6 6 0	
A. G. Cloake (socket up), London	5 0 0	5 3 6	
R. Laidlaw & Sons (socket up), Glasgow	5 4 0	5 7 6	
Biggs, Wall & Co. (socket up), London	5 4 9	5 8 3	
J. & R. Ritchie, Ltd. (socket up), Middlesbrough	5 5 0	5 7 6	
T. Allen & Sons, Thornaby	5 5 0	5 8 6	

	per ft.	per ft.
The British Mannesmann Tube Co.	0 1 6	0 0 9½

Contract No. 2.—Supply of windmill pumping plant.

Duke & Ockenden, Littlehampton	£298 10 0
Hunwicke Brothers, Kelvedon	240 0 0
Henry Sykes, Bankside, E.C.	230 0 0
Ortwell & Son, Maldon	228 10 0
R. Warner & Co., Walton-on-Naze	225 0 0
J. Wallis Titt, Warminster	183 15 0

The Canadian Imperial Windmill Syndicate 180 0 0

E. H. Roberts, Ltd., Stony Stratford 172 10 0

Eric S. A. Smith, Bridlington 170 0 0

Do. do. 167 0 0

Do. do. 162 0 0

Do. do. 159 0 0

Do. do. 160 0 0

Thomas & Son, Worcester 160 0 0

The Maldon Ironworks Co., Ltd. 141 7 6

J. J. Furlong, Maldon 136 2 0

Contract No. 3.—Covered concrete reservoir.

Ernest West, Chelmsford	£517 7 6
Davies, Ball & Co., Ashstead	488 2 0
J. Rayner, East Hanningfield	452 3 0
A. Ward, Great Totham	419 13 0
C. T. Thorn,* Tiptree, Kelvedon	405 15 9

* Accepted.

Nottingham.—For alterations to business premises in Angel Row. Mr. C. Nelson Holloway, architect and surveyor, Newcastle Chambers, Angel Row, Nottingham:—

W. Baron	£638 12 6
W. Inger	622 8 6
J. Cooper & Son	565 0 0
H. Green & Sons	561 8 6
J. Hutchinson & Son*	494 0 0
W. R. Wibberley & Son	486 19 0

* Accepted.

Reading.—For the erection of seven shops, Oxford Road, Reading, for Mr. W. McIlroy. Mr. W. G. Lewton, architect, Reading. Quantities by Messrs. H. Cooper & Son, Reading:—

J. Norris & Sons	£18,264
Collier & Catley	15,098
Margetts & Son	14,985
Lewis Brothers	14,955
Godwin	13,998
Curtis*	13,380

* Accepted.

Scarborough.—For laying about 9,000 yards of wood-block paving, and other works in connection therewith, in Westborough, Newborough and Aquarium Top, in the borough, for the Town Council. Mr. Harry W. Smith, A.M.I.C.E., borough engineer and surveyor:—

T. S. Starkey, Hull	£5,553 12 11
Improved Wood Pavement Co., London, E.C.	5,334 10 9
I. Robinson, Hull	5,308 13 6
Acme Wood Block Flooring Co., Ltd., London, N.E.	4,850 14 8
J. Brunton,* Hull	4,848 2 3
J. W. Pearce, Kensington, W.	4,695 19 10

* Accepted.

Wonersh (near Guildford).—For sewerage and sewage-disposal works at Wonersh, for the Hambledon R.D.C. Mr. E. L. Lunn, engineer, Guildford:—

G. Hebburn, Hersham	£6,338 17 2
T. W. Pedrette, Stamford Hill	5,700 0 0
G. A. Franks, Guildford	4,600 0 0
T. W. Trimm, Dorking	4,263 0 0
J. Jackson, Forest Gate	4,217 3 11
Davies, Ball & Co., Bromley	3,745 0 0
Higlett & Hammond, Guildford	3,727 0 0
W. H. Wheeler, Southwark	3,624 4 0
Streeter & Todhunter,* Godalming	3,635 0 0

* Accepted.

Current Market Prices.

FORAGE.

		£	s.	d.	£	s.	d.
Beans	per qr.	1	14	0	2	0	
Clover, best	per load	4	5	0	4	10	
Hay, good	do.	3	12	6	4	0	
Sainfoin mixture	do.	3	15	0	4	5	
Straw	do.	1	10	0	2	0	

OILS AND PAINTS.

Castor Oil, French	per cwt.	1	0	5	—		
Colza Oil, English	do.	1	3	6	—		
Copperas	per ton	2	0	0	—		
Lard Oil	per cwt.	2	15	0	2	17	0
Lead, white, ground, car-bonate	do.	1	4	10	—		
Do. red	do.	1	0	4½	—		
Linseed Oil, barrels	do.	0	17	10½	—		
Petroleum, American	per gal.	0	0	7½	0	0	7½
Do. Russian	do.	0	0	3½	0	0	7½
Pitch	per barrel	0	8	0	—		
Shellac, orange	per cwt.	11	10	0	—		
Soda, crystals	per ton	3	2	6	3	5	0
Tallow, Town	per cwt.	1	7	6	—		
Tar, Stockholm	per barrel	1	2	0	—		
Turpentine	per cwt.	1	13	10½	—		

METALS.

Copper, sheet, strong	per ton	71	0	0	—		
Iron, Staffs., bar	do.	6	0	0	8	10	0
Do. Galvanised Corrugated sheet	do.	10	7	6	10	12	6
Lead, pig, Soft Foreign	do.	11	7	6	—		
Do. do. English common brands	do.	11	15	0	—		
Do. sheet English 3lb. per sq. ft. and upwards	do.	14	0	0	—		
Do. pipe	do.	15	0	0	—		
Nails, cut clasp, 3in. to 6in.	do.	9	5	0	—		
Do. floor brads	do.	9	0	0	—		
Steel, Staffs., Girders and Angles	do.	5	10	0	6	5	0
Do. do. Mild bars	do.	6	0	0	6	5	0
Tin, Foreign	do.	125	17	6	126	7	6
Do. English ingots	do.	129	0	0	131	0	0
Zinc, sheets, Silesian	do.	23	12	6	—		
Do. do. Vieille Montagne	do.	23	10	0	—		
Do. Spelter	do.	21	7	6	21	15	0

TIMBER.

Soft Woods.

Fir, Dantzic and Memel	per load	1	13	0	3	0	0
Pine, Quebec, Yellow ..	do.	5	5	0	6	5	0
Do. Pitch	do.	2	11	0	2	16	0
Laths, log, Dantzic ..	per fath.	4	10	0	5	10	0
Do. Norrköping ..	per bundle	0	0	7½			
Deals, Petschora, Yellow,	1st, 3x11 per stand.	18	15	0	—		
Do. do. do.	2nd, do.	13	10	0	—		
Do. do. do.	3rd, 3x12	10	10	0	—		
Do. do. do.	4th, do.	8	5	0	—		
Do. do. do.	Unsorted,				—		
	3x8	8	15	0	—		
Do. do. White, 1st,	3x11	12	15	0	—		
Do. do. do.	2nd, 3x12	9	0	0	—		
Do. do. do.	3rd, 3x9	8	10	0	—		
Do. do. do.	Unsorted,				—		
	3x8	8	10	0	—		
Do. Süderhamm, Yellow,	3rd, 4x9	17	0	0	—		
Do. Archangel, White, 1st,	3x9	12	0	0	—		
Do. do. do.	3rd, 3x9	8	10	0	—		
Do. do. Larch, Unsorted,	4x12 and 4x13	11	10	0	—		
Do. Nederkalix, Yellow,	3rd, 3x8	8	10	0	—		
Do. Batiscan, Spruce, 3rd,	3x9	9	15	0	—		
Do. Saguenay, Spruce,	Bright Unsorted, 3x11	8	0	0	—		
Do. Kem. Yellow, 3rd,	3x9	12	10	0	—		
Do. Soroka, Yellow, 3rd,	3x9	10	15	0	—		
Do. St. Petersburg, White,	3rd, 3x11	8	15	0	—		
Do. do. do.	5x9	7	10	0	—		
Do. do. do.	do.	7	15	0	—		
Do. do. do.	2½x7 to 3x11	7	15	0	—		
Do. do. do.	Yellow, 1st,				—		
	3x9 to 11	8	0	0	—		
Do. do. do.	3rd, 3x11	7	15	0	—		
Do. do. do.	do.				—		
	2½x9 to 3x11	8	0	0	—		
Battens, all kinds ..	do.	6	1	0	21	15	0
Flooring Boards in. pre-	pared, 1st ..	per square	0	9	3	0	10
Do. 2nd ..	do.	0	10	6	—		9.
Do. 3rd, &c. ..	do.	0	8	0	—		

Complete List of Contracts Open.

DATE OF DELIVERY.		WORK TO BE EXECUTED.	FOR WHOM	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
BUILDING:				
Jan.	14	Coventry—Shop, &c.	Perseverance Co-op. Soc., Ltd.	Harrison & Hattrell, 23 Hertford Street, Coventry.
"	14	Glyn Ceiriog, Wales—Two Houses	Guardians	T. Griffiths, Coedglyn Terrace, Glyn, Ruabon.
"	14	London, E.—Alterations to School	Urban District Council	J. M. Knight, 35 Bancroft Road, Mile End Road, London, E.
"	14	Dalton-in-Furness—Library	Urban District Council	W. Richardson Surveyor, Public Offices, Station Road, Dalton-in-Furness.
"	14	Aberystwyth—Public Convenience	Town Council	R. Jones, Borough Surveyor, Corporation Offices, Smithfield Road, Aberystwyth.
"	15	Barnsley—Villa	—	Senior & Clegg, 15 Regent Street, Barnsley.
"	15	Halifax—Institute	A. S. McCrea	Walsh & Nicholas, Museum Chambers, Halifax.
"	16	Manchester—Alterations to College	Education Committee	School of Technology, Sackville Street, Manchester.
"	16	Pontypridd—Three Shops	Rhondda Valleys Brewery Co., Ltd.	A. O. Evans, Architect, Pontypridd.
"	16	Talyllyn, Wales—Parsonage	Rev. J. Williams	G. T. Bassett, Architect, Aberystwyth.
"	16	Durham—Additions to Police Station	County Council	W. Crozier, County Surveyor, Shire Hall, Durham.
"	18	Cardiff—Additions to Church	Rev. D. Davies	J. W. Rodger, 14 High Street, Cardiff.
"	18	Winchburgh, Linlithgowshire—Police Station	County Council	W. M. Scott, Architect, Linlithgow.
"	18	Ynysybwl, Wales—Bakehouse, &c.	Co-operative Society	D. D. Jones, Secretary, 45 Robert Street, Ynysybwl.
"	18	Bury, Lancs—Retorts, &c.	Gas Committee	H. Simmonds, Engineer, Gasworks, Elton, Bury.
"	18	Mountain Ash, Wales—Public Offices	Urban District Council	J. H. Phillips, Architect, Clive Chambers, Windsor Place, Cardiff.
"	18	London, S.E.—Lime, Cement, &c.	Camberwell Borough Council	W. Oxtoby, Borough Engineer, Town Hall, Camberwell, S.E.
"	18	Royal Albert Dock—Mercantile Marine Office	Commissioners of H.M. Works, &c.	Secretary, H.M. Office of Works, Storey's Gate, Westminster.
"	19	Heywood—Retorts, &c.	Gas Committee	W. Whatmough, Gas Manager, Gasworks, Heywood.
"	19	Barnsley—Hotel	J. Fox & Sons	Tennant & Bagley, Architects, Pontefract.
"	19	Cheltenham—Forty-two Houses	Great Western Railway Co.	Engineer, Gloucester Station.
"	20	Shardlow—Alterations, &c., to Offices	Guardians	Naylor & Sale, Architects, Irongate, Derby.
"	20	Aberfan, Merthyr Vale, Wales—Business Premises	—	W. Dowdeswell, Architect, Treharris.
"	20	Blackpool—Additions, &c.	Sanitary Committee	J. S. Brodie, Borough Engineer, Town Hall, Blackpool.
"	20	Birmingham—Lime, Cement and Bricks	Public Works Committee	City Surveyor, Council House, Birmingham.
"	20	Ramsgate—Free Library	Corporation	E. B. Sharpley, Town Clerk, Albion House, Ramsgate.
"	21	Trealaw, Rhondda Valley, Wales—Chapel	—	J. Thomas 88 Miskin Road, Trealaw.
"	21	Merthyr Tydfil—School	School Board	S. L. Smith, 50 High Street, Merthyr Tydfil.
"	24	East Ham—Restoration of School after Fire	Education Committee	R. L. Curtis, 120 London Wall, Moorgate Street, E.C.
"	25	Edinburgh—Terra-cotta, Enamelled and Glazed Bricks	Corporation	W. R. Herring, Chief Engineer, New St. Works, Edinburgh.
"	26	Kensington—Fire Station	London C.C.	Architect's Dept., Fire Brigade Branch, 3 Warwick St., Charing Cross, S.W.
"	26	London, E.C.—Alterations, &c., to Royal Mint	Commissioners of H.M. Works, &c.	Secretary, H.M. Office of Works, Storey's Gate, London, S.W.
"	26	Langho, near Blackburn, Lancashire—Epileptic Homes, &c.	Joint Asylum Committee	Giles, Gough & Trollope, 28 Craven Street, Charing Cross, W.C.
"	27	Derby—Offices	Standing Joint Committee	J. S. Storey, County Surv., County Offices, St. Mary's Gate, Derby.
"	27	Ecclesall—Stores	Industrial & Provident Soc., Ltd.	H. L. Paterson, 19 St. James's Street, Sheffield.
Feb.	1	Sunderland—Additions, &c., to Hall	Corporation	J. Eltringham, 62 John Street, Sunderland.
"	1	Birr—Eight Labourers' Dwellings	Urban District Council	H. Browne, Town Surveyor, Town Hall, Birr.
ENGINEERING:				
Jan.	15	Spain—Bridge over River Tuerito	Ministry of Public Works	Commercial Intelligence Branch, B. of Trade, 50 Parliament St., S.W.
"	15	Pontypridd—Electrical Pipework and Meters	Urban District Council	R. P. Wilson, 66 Victoria Street, Westminster.
"	15	Glansha, Ireland—Borehole	Londonderry District Lunatic Asylum	M. A. Robinson, Richmond Street, Londonderry.
"	15	Wattstown, Wales—Waterworks	Rhondda U.D.C.	O. Thomas, Engineer, Gas & Water Offices, Pentre, R.S.O., Glam.
"	16	Rye—Water Mains	Rural District Council	E. J. Cory, Surveyor, High Street, Rye.
"	16	Wilton, Wilts—Septic Tank, &c.	Guardians	Lemon & Blizard, 38 Silver Street, Salisbury.
"	16	Southwam, near Halifax—Stone Shaft	—	R. Berry, Mining Engineer, Commercial Street, Halifax.
"	16	Egremont, Cheshire—Cables	Wallasey U.D.C.	J. A. Crowther, Electric Supply Works, Sea View Road, Liscard.
"	18	Erith, Kent—Electrical Plant	Urban District Council	C. H. Foy, Clerk, Council Offices, Erith.
"	18	Belfast—Lamps and Fittings	Harbour Commissioners	G. F. L. Giles, Harbour Engineer, Belfast.
"	19	Rotherhithe and Radcliffe—Footway Tunnel	London County Council	Engineer's Department, County Hall, Spring Gardens, S.W.
"	19	Greenwich—Pumps	London County Council	County Hall, Spring Gardens, S.W.
"	19	London—Tunnel	London County Council	Engineer's Department, County Hall, Spring Gardens, S.W.
"	19	London, S.E.—Gas Engine	Deptford Council	Borough Surveyor, 493 New Cross Road, S.E.
"	19	Chadderton, Lancs—Steel Girder Footbridge	Urban District Council	A. W. Cox, Surveyor, Town Hall, Chadderton, Oldham.
"	19	Enniscoorthy, Ireland—Electrical Plant	Dist. Lunatic Asylum Committee	H. T. Harris, 30 Parliament Street, Dublin.
"	21	Newmarket—Main	Urban District Council	J. W. Metcalf, Town Hall, Newmarket.
"	22	Walthamstow—Bridge Works	Urban District Council	G. W. Holmes, Engineer, Town Hall, Walthamstow.
"	25	Edinburgh—Gas Propelling Machinery	Corporation	W. R. Herring, Chief Engineer, New Street Works, Edinburgh.
"	26	Walthamstow—Corrugated Iron Shed, &c.	Urban District Council	G. W. Holmes, Engineer, Town Hall, Walthamstow.
"	26	London, E.—Towing-path Wall	London County Council	Engineer's Department, County Hall, Spring Gardens, S.W.
"	28	Oldbury—Pumping Station	Urban District Council	J. T. Eayrs, 39 Corporation Street, Birmingham.
"	30	Devonport—Gasworks	Corporation	Stevenson & Burstal, 38 Parliament Street, Westminster.
"	31	Palermo—Steam Flour Mill, &c.	Syndic	Commercial Intelligence Branch, Board of Trade, 50 Parliament Street, S.W.
Feb.	1	Cairo—Three Road Bridges over Nile	Ministry of Public Works	Commercial Intelligence Branch, Board of Trade, 50 Parliament Street, S.W.
Mar.	17	Christchurch, New Zealand—Electrical Tramways	—	Agent-General for New Zealand, Victoria Street, London.
FURNITURE:				
Jan.	25	Leeds—Furniture	Sanitary Committee	W. J. Jeeves, Town Clerk, Leeds.
"	31	Bristol—Bedsteads, &c.	Health Committee	General Medical Superintendent, 40 Prince Street, Bristol.
IRON AND STEEL:				
Jan.	14	Peterborough—Drain Pipes, &c.	City Council	J. W. Walshaw, City Surveyor, Guildhall, Peterborough.
"	14	Margate—Mains and Specials	Isle of Thanet Gas Co.	J. Dougall, Gasworks, Margate.
"	14	London, E.C.—Stores	Rt. Indian Peninsula Railway Co.	Company's Offices, 48 Cophall Avenue, E.C.
"	14	Manchester—Stores	Rochdale Canal Co.	Company's Stores, 80 Dale Street, Manchester.
"	18	London, S.E.—Stores	Camberwell Borough Council	W. Oxtoby, Borough Engineer, Town Hall, Camberwell, S.E.
"	20	Christiania—Rails, &c.	—	Commercial Intelligence Branch, Board of Trade, 50 Parliament Street, S.W.
"	20	Swinton, Lancs—Sewer Ventilators	Urban District Council	H. Entwistle, Council Offices, Swinton.
"	22	Birmingham—Stores	Public Works Committee	City Surveyor, Council House, Birmingham.
"	22	London, S.W.—Hurdles, &c.	London County Council	Parks Department, 11 Regent Street, S.W.
"	23	Harrogate—Pipes	Corporation	G. Wilkinson, Corporation Electricity Department, Harrogate.
"	23	Harrogate—Ironmongery, &c.	Corporation	E. W. Dixon, 14 Albert Street, Harrogate.
PAINTING AND PLUMBING:				
Jan.	14	Manchester—Oils and Paints	Rochdale Canal Co.	Company's Stores, 80 Dale Street, Manchester.
"	20	Blackburn—Painting, &c.	Town Hall, &c., Committee	W. Stubbs, Borough Engineer, Municipal Offices, Blackburn.
Feb.	8	Manchester—Painting	Lancs & Yorks Railway Co.	Engineer's Office, Hunt's Bank, Manchester.
ROADS AND CARTAGE:				
Jan.	14	Glamorgan—Road Widening	County Council	T. M. Franklen, Clerk, County Offices, Westgate Street, Cardiff.
"	16	Seaford—Granite and Slag	Rural District Council	E. Clements, 74 Southgate, Seaford.
"	16	Farnborough, Hants—Street Works	Urban District Council	J. E. Hargreaves, Surveyor, Town Hall, Farnborough, Hants.
"	16	Wimbledon—Making-up	Urban District Council	C. H. Cooper, Engr., Council Offices, The Broadway, Wimbledon.
"	18	London, S.E.—Granite, &c.	Camberwell Borough Council	W. Oxtoby, Borough Engineer, Town Hall, Camberwell, S.E.
"	19	Rotherhithe and Radcliffe—Carriageway	London County Council	Engineer's Department, County Hall, Spring Gardens, S.W.
"	19	Horwich, Lancs—Street Works	Urban District Council	Surveyor, Council Offices, Horwich.
"	19	Chadderton, Lancs—Street Works	Urban District Council	A. W. Cox, Surveyor, Town Hall, Chadderton, Oldham.
"	19	Braintree, Essex—Materials	Rural District Council	E. H. Bright, Surveyor, Dodds Hall, Braintree, Essex.
"	20	Fulham—Making-up	Borough Council	F. Wood, Borough Surveyor, Town Hall, Fulham, S.W.
"	20	Birmingham—Materials	Public Works Committee	City Surveyor, Council House, Birmingham.
"	23	Hailsham, Sussex—Materials, &c.	Rural District Council	E. Catt, 17 London Road, Hailsham.
"	24	Midhurst, Sussex—Granite, &c.	Rural District Council	A. G. Gibbs, District Surveyor, Council Offices, Midhurst.
"	25	Belfast—Flagging	Harbour Commissioners	G. F. L. Giles, Harbour Engineer, Belfast.
"	25	Hatfield, Herts—Granite and Slag	County Council	U. A. Smith, County Surveyor, Hatfield.

Complete List of Contracts Open — *continued*

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
SANITARY:			
Jan. 16	Thaneville. nr. Ellenborough, Cumberland—Sewerage Works	Cockermouth R.D.C.	J. B. Wilson, Engineer, Cockermouth.
" 18	Blakedown, Worcs.—Sewerage Works	Bromsgrove R.D.C.	H. W. Taylor, Engnr., St. Nicholas Chambers, Newcastle-on-Tyne.
" 18	Lower Hagley, Worcs.—Sewerage Works	Bromsgrove R.D.C.	H. W. Taylor, Engnr., St. Nicholas Chambers, Newcastle-on-Tyne.
" 19	London, S.E.—Stoneware Drain Pipes, &c.	Camberwell Borough Council ..	W. Oxtoby, Borough Engineer, Town Hall, Camberwell, S.E.
" 19	Bolton—Emptying Ashpits (Two Contracts)	Corporation	Town Clerk, Town Hall, Bolton.
" 23	Methley, Yorks—Sewerage Works	Urban District Council	G. B. Hartley, Engineer, East Parade Chambers, Leeds.
" 25	Wordsley, Stourbridge—Sewerage Works	Kingswinford R.D.C.	W. Fiddian, Engineer, Old Bank Offices, Stourbridge.
" 30	Melksham—Sewerage and Sewage-disposal Works	Urban District Council	A. G. Smith, Clerk, Melksham.
TIMBER:			
Jan. 15	Cape Town—Timber	Government Rly. Department ..	Railway Stores, Cape Town.
" 18	London, S.E.—Timber	Camberwell Borough Council ..	W. Oxtoby, Borough Engineer, Town Hall, Camberwell, S.E.
" 20	Birmingham—Timber	Public Works Committee	City Surveyor, Council House, Birmingham.

List of Competitions Open.

DATE OF DELIVERY.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	DEPOSIT REQUIRED FOR CONDITIONS, &c.	BY WHOM ADVERTISED.
Jan. 15	Windsor—Police and Fire-Brigade Stations ..	£26 5s.	£1.	E. A. Stickland, Borough Surveyor, Town Council Offices, Windsor.
" 20	Wakefield—Public Library	—	—	C. J. Hudson, Town Clerk, Town Hall, Wakefield.
" 31	Borstal, Rochester—Chancel, Organ Chamber, &c.	—	—	Borstal Vicarage, Rochester.
Feb. 1	Erdington—New Council House & Free Library..	£50, £30, £20.	£1 1s.	H. H. Humphries, District Engineer, Public Hall, Erdington, Birmingham.
" 1	Sevenoaks—Public Library	—	—	H. J. Thompson, Clerk, Council Offices, Argyle Road, Sevenoaks.
Mar. 1	Ilkley—Free Library &c.	£100, £50, £20.	£1 1s.	F. Hall, Clerk, Council Offices, Ilkley.
" 31	Vienna—Machinery to Lift Boats on Canal ..	100,000, 75,000 & 50,000 kronen.	—	Austro-Hungarian Consulate-General, 22 Laurence Pountney Lane, E.C.
No date	Torquay—Public Library	£52 10s., £31 10s.	—	F. S. Hex, Town Clerk, Town Hall, Torquay.

Trade and Craft.

A Splendid Catalogue.

Quite the finest catalogue which we have yet seen is that of fitted sanitary appliances just issued by Messrs. Doulton & Co., Ltd., of Lambeth. Every architect should obtain a copy. It is most excellently printed, well arranged, has three indices, is completely illustrated from photographs, and embraces every kind of closet, bath, lavatory, urinal and sink, with a section at the end dealing with manhole covers, automatic tanks and flushing syphons. The illustrations are in every case perfect, many of them being in well-chosen colour, and the particulars and prices are clearly set forth below each. To describe even a tithe of the appliances shown would occupy too much of our space. A summary of the firm's specialities is given in the introduction, and we cannot do better than quote from it. Special attention is directed to glazing and enamelling. All Messrs. Doulton's fireclay goods are glazed with a material absolutely free from lead or other injurious matter, and will stand the action of acids. For iron baths a vitreous enamel has almost entirely superseded the paint or metallic finish, this enamel being applied when the bath is highly heated, so

that it becomes practically an integral part of it, and there is no danger of its being damaged by water entering too hot; moreover, being free from lead or other deleterious matter, it does not become discoloured. Certain chemicals will affect enamels of any kind, but Messrs. Doulton state that theirs may be safely used in most cases, and brine of all strengths, either hot or cold, will not harm it in any way. Great attention has been given to hospital appliances, these being strong, clean, simple and easy of access in every part; many of the sinks are made to be actuated by foot, knee or arm. Though we cannot now refer in detail to the many appliances illustrated, we desire to draw attention to Doulton's patent metallo-ceramic joint for securing a perfect connection between the closet outlet and the soil-pipe. The closet is finished and fired in the usual way, and then the outlet is coated with a certain preparation and re-fired, after which a short length of lead soil-pipe is soldered on to the prepared part, and the connection is so perfect that the lead can only be removed by breaking off the surface of the ware at the same time. Though the use of this joint adds to the first cost of the closet, the actual increase is very slight, for not only is the expense of the brass thimble saved, but also the time taken in cementing

it to the closet and testing to see if the joint is sound.

The Waygood Electric Lift.

Messrs. R. Waygood & Co., Ltd., of Falmouth Street, London, S.E., issue a pamphlet relating to their well-known electric passenger lift. In this the brake is operated by the electric current, and comes into action automatically when the current is shut off from any cause. The control is electric, with pilot switch in cage, operated by self-centering detachable handle (in high-speed lifts this is arranged with two speeds and with automatic slowing at extreme floors: with slow speeds a hand-rope control may be employed). A considerable amount of controversy has arisen as to the comparative merits of drums and V-sheaves for driving electric lifts. The V-sheave drive is the cheaper, and is particularly suited for goods lifts, besides which four ropes can be connected to the cage, and the drive occupies less space. On the other hand, with Messrs. Waygood's drum-winding there is no slip, no danger of overrunning, no slack cable, the ropes last longer and are so attached to the drum at one end and the safety-gear at the other that as one set winds on, the other winds off. For passenger lifts therefore they favour drum-winding, as do also the Otis Co.

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PARTICULARS FROM **ROBERT ADAMS, Patentee,**
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AND PERFECTION IN DOOR SPRINGS.

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OFFICE: 6, GREAT NEW STREET, FETTER LANE. E.C.

THE BUILDERS' JOURNAL

AND ARCHITECTURAL RECORD.

January 20, 1904. Vol. 19, No. 467.

6, Great New Street, Fetter Lane, E.C.

Summary.

The Soane Medallion for the design of a university theatre has been won by Mr. Frederic J. Horth, of Hull; the other prize-winners were announced at the Institute meeting on Monday evening. (Page 31.)

At last week's dinner of "The International" Mr. Edmund Gosse said that no one in the intelligent world looked at sculpture to-day exactly as he did before M. Rodin put his mark upon it. (Page 30.)

The fall of the Toddington Viaduct on the G.W.R. line was brought about by the contractors allowing the crane to be placed directly over the crown of arch No. 10, which was not sufficiently backed up in the haunches, and was assisted in part by the mortar not being sufficiently set. (Page xiii.)

THE ARCHITECTURAL REVIEW is to appear with a new cover, additional pages, better paper, and more illustrations of current work, reproduced in the best possible manner. The price will in future be 1s. (Page 34.)

A protectionist correspondent explains that neither the workman nor the tenant gets any benefit out of foreign joinery imported by the speculative builder. In the better-class building very little of it is used at present. Here the architect is the workman's friend, a kind of fiscal comptroller, because "it is not his interest to injure the building by reducing the cost, as he thereby reduces his commission." Another correspondent gives a doleful account of the granite industry at Penryn, in Cornwall, due to the competition of Norwegians and Swedes. (Page 36.)

The alterations made at the Savoy Theatre, which is to be reopened very soon, include additional exits, new staircases and partitions of fire-resisting material instead of lath-and-plaster ones. The theatre has also been re-decorated, the original scheme of colour—Venetian red, old gold and peacock blue—being retained. (Page 36.)

As the total amount of money has not yet been subscribed, the first of the Ingram Houses (for clerks, &c.), at Stockwell, will provide 208 bedrooms, as against 270 originally proposed. (Page xiii.)

Burford Church furnishes examples of every style from Norman to Perpendicular, the two extremes being well instanced by the entrances. The old priory is doubtless the much-contracted remnant of the house built by William Lenthall, the famous Speaker of the Long Parliament. The chapel and cloister connecting it to the main building remain unaltered, but the rest of the building seems to have been reduced from the Elizabethan M-shaped plan to the present one. The Great House is another interesting old domestic building at Burford—especially interesting because it is built right on the road like a town house, with none of the surrounding land and forecourt which one would naturally expect to find as adjuncts to a building of such dimensions in a country town. (Page 26.)

Theatre Safety.

WE recur to this important subject once more in view of some suggestions made to the London County Council by Mr. Edwin O. Sachs, architect to Covent Garden Theatre and a well-known expert on fireproof construction. The suggestions are four. First, Mr. Sachs proposes that the Council should henceforth insist on theatres standing on open sites, preferably such as are surrounded on all sides by public thoroughfares, or at least by thoroughfares on two sides and passages not less than 25ft. wide on the remaining sides: this not so much on account of the possible dangers from fire or panic arising from accidents on adjoining property as on account of the advantage obtained for the straightforward and symmetrical planning of direct staircases and exits. Everyone will agree that it would be desirable for theatres to be built on such sites, but no one is more alive to the fact than Mr. Sachs that such provision would involve a vast expenditure in the West End. Still, as a principle to follow, even at a sacrifice, it is a worthy one. Let anyone think, for instance, of the Vaudeville Theatre or the Lyric. Mr. Sachs's second suggestion is that symmetrical planning in the position of and routes of direct exit be peremptorily insisted upon, and all circuitous routes prohibited. Next, he strongly advocates the complete banishment of all inflammable material from the stage, "as the metallic stage, with its hardwood floor, impregnated scenery and properties, and the wire cable in place of rope are all within practical and economical possibility nowadays." Lastly, Mr. Sachs regards as essential the compulsory installation of efficient automatic sprinklers throughout the stage, stores and stage offices. In regard to inflammable material on the stage it is interesting to note that Lord Clarendon (the Lord Chamberlain), Sir Algernon West (chairman of the L.C.C. Theatres Committee), together with the members of the Theatres Committee, Mr. W. E. Reilly, chief architect, Captain Hamilton, chief officer of the Fire Brigade, and several other officials, visited the Alhambra Theatre one day last week to witness a series of experiments in demonstration of the fire-resisting qualities of the material used in the scenery and ballet, when the visitors expressed their satisfaction with everything submitted to them. We trust other theatres will be equally zealous in this matter as the Alhambra. Solid wood for fire-resisting construction is receiving renewed attention. Quite recently a series of fire tests with three staircases constructed of iron, concrete and wood respectively have been undertaken by experts of the Berlin fire-brigade, and,

as a result, they have decided that hardwood is the best fire-resisting material for the purpose.

Architects and their Bread and Butter.

ARCHITECTS are being roused by that ogre the city surveyor, sometimes known as the borough engineer. Last week we drew attention to the protest made by the Birmingham Architectural Association against the increasing amount of architectural work put into the hands of their city surveyor. Now the Wolverhampton Architectural Association has followed suit by protesting to the town council against the "unfair custom of entrusting architectural works to be carried out by the borough engineer's department"; and specifically against the appointment of the borough engineer as architect for the South Staffordshire joint small-pox hospital. It is to be regretted that such a protest should have been possible, more especially as it includes the statement that "the profession and training of an engineer and that of an architect are quite distinct." When one sees how very much architecture and engineering are allied in many large modern buildings, it is a pity that the interests are not more often embodied by the one or the other man; we suppose, however, the truth must be admitted that the architect, as a rule, is only half competent in regard to matters of strengths, stresses, wind-pressures, &c., while the engineer's incomplete training makes him a very good engineer and a very bad architect. But, coming back to the matter under notice, the Wolverhampton Architectural Association says that as architects are required to deposit copies of all their plans in the office of the borough engineer it is manifestly unfair that the engineer and his assistants, having access to these plans, should be allowed to compete against them in their professional work. This is by no means a fresh complaint, nor one without good reason; architects themselves are very apt to "crib," and we doubt not that the borough engineer is no less susceptible to the temptation. For the present the matter has been referred by the council to a committee. The question is not one of municipal architectural socialism—or certainly does not commend itself as such—for "there are duly qualified architects, who are ratepayers, practising in the town," and "no architectural assistant can properly take the place of a responsible architect." We cannot say we like the wording of these two claims, nor quite the spirit which prompts them, but we gladly support what is in the main a very legitimate protest.



THE TOLSEY, BURFORD.

BURFORD.

By H. TANNER, jr., A.R.I.B.A.

IN the present age of hurry, steam and electricity, while gladly availing oneself of these advantages of modern times in the usual course of events, it is an acceptable relief to bury oneself for a while in an old country town like Burford in Oxfordshire—alas no longer vigorous, but not yet fallen, as many another old coaching centre, into the sad hopeless decay of a former greatness.

To get to Burford the only mode of transit is a 'bus ride from the nearest, or rather least distant, railway station. This carries us through Shipton, where we get a glimpse of the charming old court between the tall gate piers on one side of the way and of a long avenue of elms on the other, the view of these being evidently well appreciated at the house, as the mass of bushes opposite the door is trimmed down to preserve it. The old inn on the road, with its mounting steps and fine Perpendicular entrance to the courtyard, also claims attention for a short while.

But our interest is at once aroused when from a plateau we first see the old town in the distance with its broad main street, the scene of many a busy market and fair, straggling up the hill, bordered by old-world houses on either side.

The history of Burford takes us back to Saxon days, when it began to play a part in the affairs of the nation; a great battle was fought here between the kings of Mercia and Wessex, ending in a hard-won victory for the latter, after which the place again entered upon a peaceful time. In mediæval days it became a prosperous town of many manufactures, saddlery being one of the most important, and for which it became famous. The gathering-place for an important fair, which we can picture in full swing round the old "Tolsey," and the centre for a well-patronized race meeting, near a vast forest well fitted for the royal hunt, the town must have prospered well; but now—deer, horses, booths and junketings are gone, the forest has disappeared and the manufactures have dwindled away; yet after all a peaceful old age, a gradual decay, is a better end than a

forest of tall chimneys and a flood of factory hands, redolent at 12 o'clock of pickled cabbage, cocoa and bad tobacco.

At one time Burford was reckoned as the town of second importance in the county, giving precedence only to Oxford, the heart and soul of the Royalist cause, whose neighbourhood was the cause of many troubles for the smaller town and not a few graves in the churchyard down by the river. During the Civil War Burford saw much of the fluctuating fortunes of both Chevalier and Roundhead. Charles visited the town many times and Elizabeth had done so before him, so the good folk there were no strangers to the sight of Royalty. The king, who lost his life in Whitehall (before a fragment of that building which should have been the finest palace in Europe), passed through the town at varying times of his chequered career; towards the end he was there twice within a few days.

Charles II. also visited the town, an act

which apparently gave great joy to the inhabitants, and he was graciously pleased to accept a gift of saddlery, as was William thirty years afterwards when touring the country electioneering for his next parliament.

Though these were great and glorious happenings, it was after the Civil War and during the rebellion of some of the Parliamentary troops that the most stirring scenes in the history of Burford were enacted. The mutineers from the Puritan army were surrounded in the town, where they had taken up their quarters; after an obstinate struggle they were beaten and about 400 of them taken prisoners, and put in the church for safe keeping, while the churchyard was used for a more violent purpose, no less than the execution of the chief ringleaders of the mutineers.

With this brief summary of the principal events in the history of Burford, let us turn to the architectural and picturesque qualities of the town—glories of a ripe old age, quiet



BURFORD BRIDGE.

almost to dulness, but peaceful and well earned.

We may well begin by an investigation of the church, which has played its part in the scenes of war and bloodshed. The plan of the building, which is dedicated to St. John the Baptist, is an unusual one (see p. 29), the product of the accumulation of the art of many ages, as is usual with the greater number of our Gothic churches, giving us examples of every style from Norman to Perpendicular, the two extremes being well instanced by the entrances: the Norman doorway at the west end, with its well-preserved chevron ornament, and the beautiful porch on the south side with the ornate front and fan-vaulted ceiling.

The interior of the church has many points of interest, several good tombs, and in the north aisle a font much defaced but originally a fine piece of ornamented work; and it is interesting to note a rather pathetic inscription scratched on the lead lining—"Anthony Sedley Prisner 1649."

The tomb of Sir Laurence Tanfelde, Lord Chief Baron of the Exchequer, is a splendid Renaissance monument, for which alone the church is well worth visiting. It is a rectangle on plan, the sides twice the ends, with Corinthian columns supported on pedestals the height of the sarcophagus, on which recline the figures of the knight and his lady. The order supports an attic with some good sculptured figures, semicircular openings being formed between the columns. The whole work is rich in inscriptions and heraldry, as is usual with monuments to persons of any importance at this period.

Another interesting and very curious feature is a small chapel, about 9 ft. square, set under the end bay of the northern main arcade. This chapel, which is partly of wood and partly of stone, was in all probability originally two separate smaller ones, the stone part (according to Rickman) having once been used as a seat.

The building in the town of next importance to the church is the priory, which, though a private domestic building since the days of Henry VIII., undoubtedly derives its name from the monastic establishment which existed there prior to that time. A religious house existed here as early as the end of the thirteenth century, and was one of the 380 which were suppressed by Henry VIII. in order that their revenues might augment his exchequer. The abolition of these monasteries was a step that raised a storm of opposition throughout the country, chiefly among the lower classes, who were thus deprived of their only source of help in times of illness, their place of instruction, and their refuge in old age; for though undoubtedly many monasteries were the scenes of persistent immorality and crime, yet they fulfilled all the duties of school, hospital and almshouse to the neighbouring poor. However, what concerns us most for the present is the architectural destruction consequent on the dispersion of the monks, when their splendid buildings were either razed to the ground or left to the piecemeal demolition of the local population, who thus secured a store of building material easily quarried. The former was probably the fate of the priory at Burford, for Edmund Harman, to whom the estate was granted, proceeded to build a new house for himself on the site of the old one. About fifty or sixty years later the estate was sold to Sir Laurence Tanfelde, whose monument has already been described, and he is said to have built again a new Elizabethan house; but I should say that he most probably did not do more than alter Harman's building, as when later the property belonged to Speaker Lenthall, still another house was erected.

Harman's house, which, from what we can gather, was one of much magnificence, did not remain in the possession of his family



THE CHAPEL, BURFORD PRIORY.



HOUSES AT THE TOP OF THE HILL, BURFORD.

very long; he left but one child, a daughter, who married, against his will, Henry Cary Viscount Falkland, and curiously enough Falkland's son again married contrary to his father's wish, though he inherited Burford Priory and other estates from his grandfather.

When the Civil War broke out the younger Falkland, a man of great literary attainments, was at first an adherent of the Parliamentary party, but he afterwards devoted his services to the king, by whom he was made Secretary of State, and remained his constant supporter and adviser till he met his death on the field of Newbury.

The estate then passed into the hands of William Lenthall, the famous Speaker of the Long Parliament, and he in his turn set to work on another house, of which I have no doubt the present ruin is the much-contracted remnant. From an old print published in Jackson's "Oxford Journal" we can gather an idea of the house as it existed till 1808. The chapel and cloister connecting it to the main building remain unaltered, but the rest of the building seems to have been reduced from the Elizabethan Π -shaped plan which is indicated by the dotted lines in the illustration of the present one below. The existing building bears out this contention, as the centre feature and the right-hand bay have every appearance of having been "stuck on," the joints being straight: in fact, the whole plan gives me the idea of the owners concentrating their apparently very slender resources on making some show of magnificence over a more restricted area. The staircase is undoubtedly an insertion of this period and is certainly a very charming specimen of its kind, lightly handled and inlaid with walnut in a very effective manner. On the other hand, the ceiling above is rather coarsely moulded, though striking. The hall on the first floor shows signs of the modernizing in the panelling; the fireplace—an ignorant piece of work—must, however, belong to the earlier date.

As regards the front (see plates in this issue), the centre feature is rather a compilation of scraps from the lowest order with the grotesques above up to the shell ornament at the top, but the flanking bays, though filled in with sash windows (for which they were never intended), are the best features; but unfortunately it must be admitted that the top windows of the short proportions, on which so much of the success of the whole thing depends, are only dummies!

The arcade to the chapel is a simple and effective piece of work without any special features; the chapel itself, however, is one of the most curious architectural efforts to which the warring elements of design at the time of its building ever gave rise. Classic and Gothic are intermixed here in the most audacious fashion. The windows have regular Classic architraves around the rectangular openings, the actual window being a pointed Gothic one with rather coarse tracery and the spandrels filled in with nondescript sort of carving. The original roof must have been a segmental stone barrel-vault (the springings of which

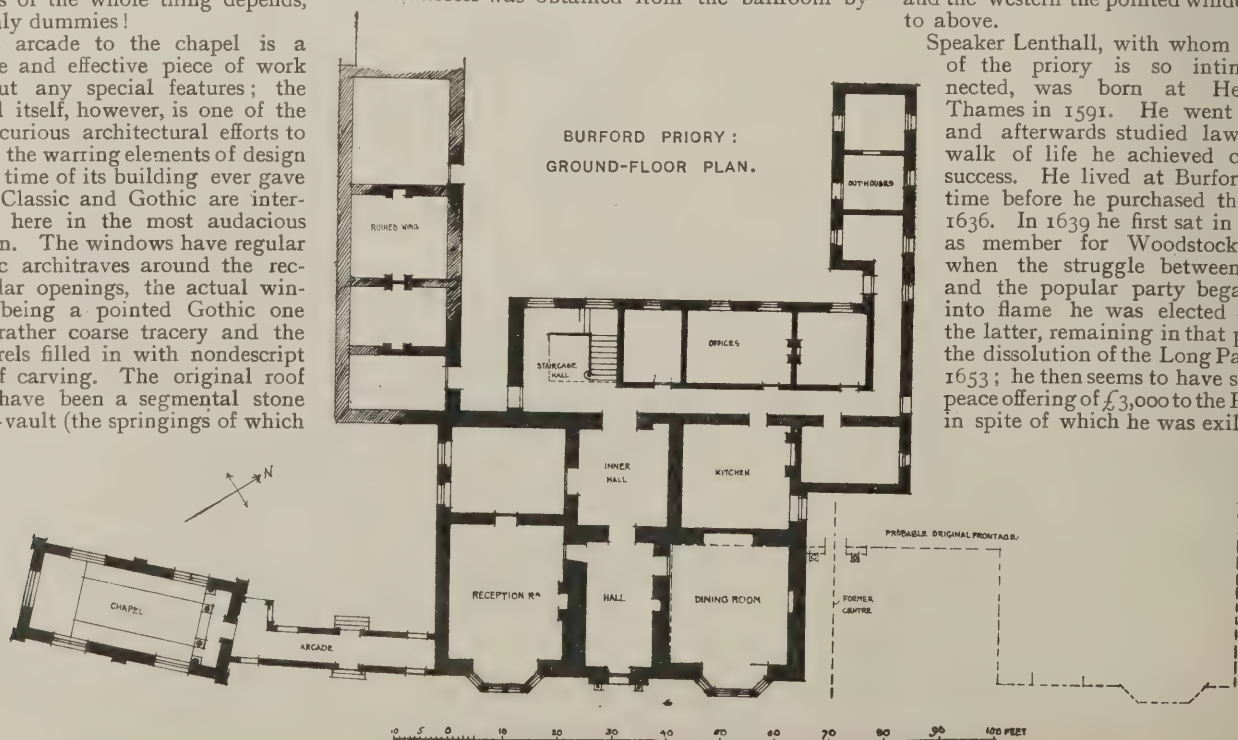


OLD HOUSES OPPOSITE THE TOLSEY, BURFORD.

remain) above a regular entablature, and as there was apparently no tie the walls bulged and let the roof in. Over the door at the west end there is a curious carving of the burning bush with an angel standing on either side, and two fluted columns support what was once an ornamental wooden gallery to which access was obtained from the ballroom by

the top of the arcade; over this doorway is a fine carving of the royal arms, the foliage being very well designed and executed. The general design of the exterior is that of an order and an attic with the two ends gabled, there being two bays on each side, the easternmost ones having a wheel window and the western the pointed windows referred to above.

Speaker Lenthall, with whom the history of the priory is so intimately connected, was born at Henley-on-Thames in 1591. He went to Oxford and afterwards studied law, in which walk of life he achieved considerable success. He lived at Burford for some time before he purchased the priory in 1636. In 1639 he first sat in Parliament as member for Woodstock, and just when the struggle between the king and the popular party began to burst into flame he was elected Speaker by the latter, remaining in that position till the dissolution of the Long Parliament in 1653; he then seems to have subscribed a peace offering of £3,000 to the Restoration, in spite of which he was exiled, but the



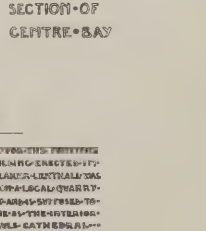
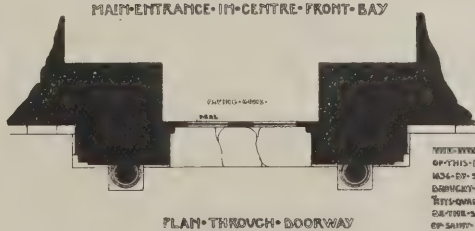
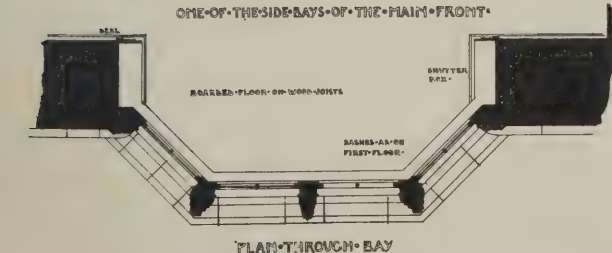
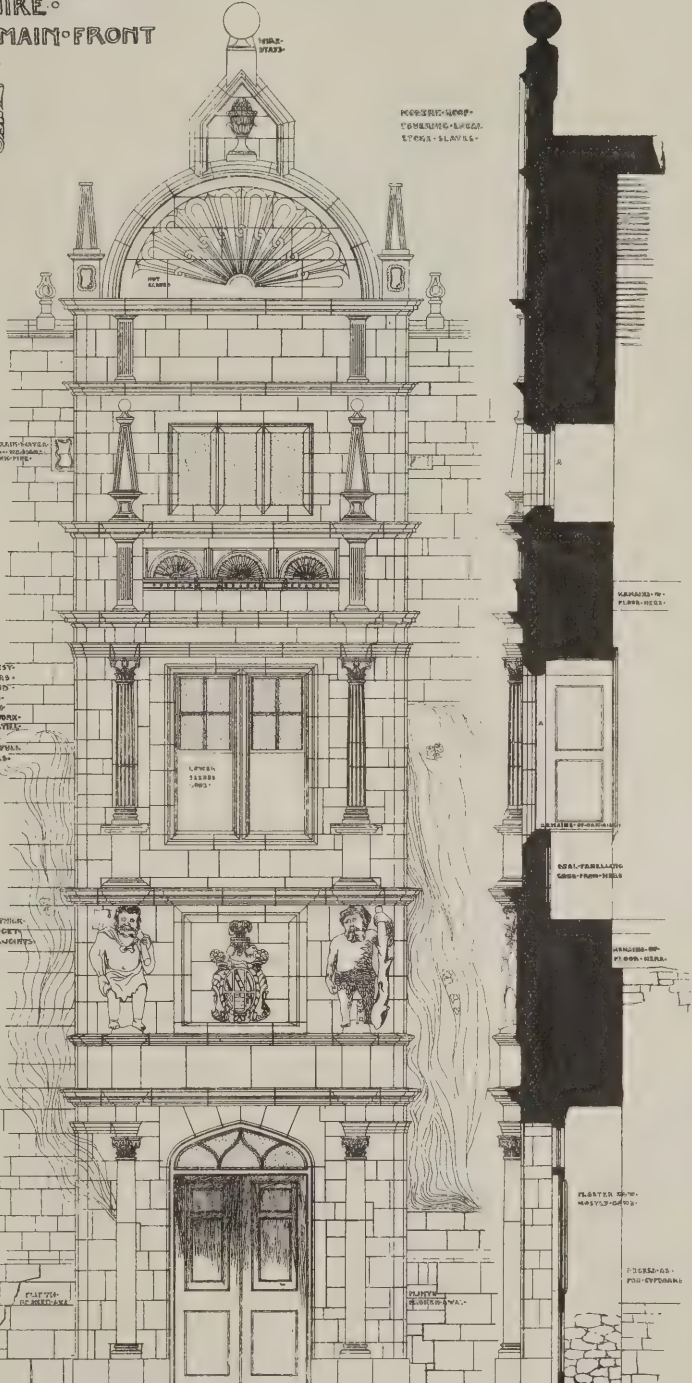
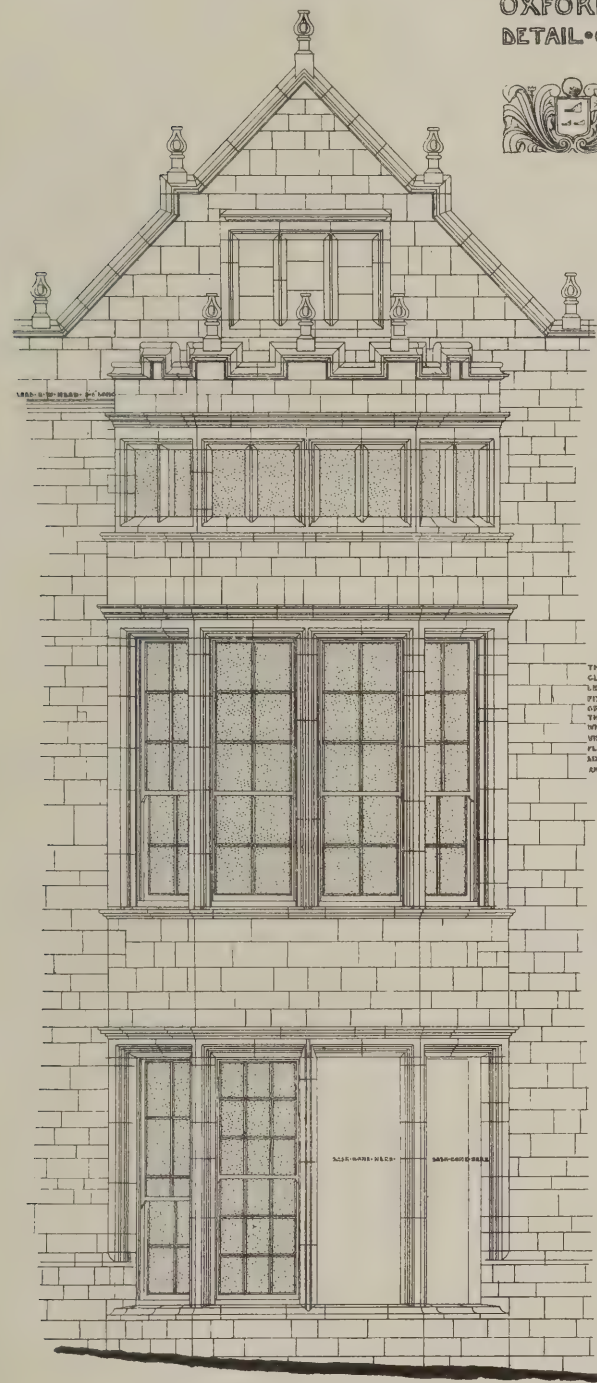
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Supplement to
THE BUILDERS' JOURNAL AND ARCHITECTURAL RECORD,
Wednesday, January 20th, 1904.



BURFORD PRIORY.

BURFORD PRIORY.
OXFORDSHIRE.
DETAIL OF MAIN FRONT



MEASURED AND DRAWN BY H. TANNER, JR., A.R.I.B.A.

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sentence being recalled he returned to Burford and spent the remainder of his days in peace at the priory.

The Great House, the domestic work next in importance to the priory, is a large square block close to the road. So far as one can judge from appearances, it seems to have been built much later than any other building in Burford, and, other than the priory, is the only house of any dimensions. It would be very interesting to know who could have built this place standing right on the road like a town house, with none of the surrounding land and forecourt which one would naturally expect to find as adjuncts to a building of such dimensions in a country town. The design is severe and the inherent inclination to the older manner is shown in the battlemented parapet and finials; the centre feature—the doorway—is emphasized by a semicircular flight of steps, the ground floor being raised over a half-basement. The ground-floor windows have horizontal entablatures and those on the first floor pediments, alternately segmental and straight; above that the square second-floor windows are arranged in a deep frieze below a correct cornice, but a very unsatisfactory feature is the large central pediment "stuck" on the top, having no connection with the main design.

The old Tolsey, or toll-house, where the dues incurred by visitors to the fair were paid to the lord of the manor, is an interesting building at the corner of the Cirencester Road and the main street; in the illustration on p. 26, which shows the building as it is at present, the stone piers can be seen which formed the original support, the lower storey having been open, like most of the old market houses. The arches were filled in to provide for a lock-up and a fire-station, and apparently one side has been carved back in later times to widen the road.

No doubt once or twice a week there were some merry happenings round the old Tolsey and in the main street, which is very wide at this point.

On the opposite side are some other old houses of about the same date, probably built sometime in the fourteens; their long pent roof over the projecting shops on each side, with the ample shelter in front of the centre one, must have been a fruitful source of income to the crafty tenant, as in pre-umbrella days a goodly crowd must have gathered here, and he were a poor trader who could not turn this to advantage. The simple windows above are pleasing, and the once well-carved but now rather weather-worn bargeboards are finished with a finial, of which there are many in this old town; in fact, they seem all to have been made from one pattern.

Let us cross over the main road again, and a little lower down the hill we come to "The George," an interesting old place that one instinctively stops to sketch without being aware of the old associations which give it an additional interest. The front is plastered, and was doubtless at one time a bright and beautiful pink that would scream to you on the hills a mile away, now fortunately toned down by time and weather; before this coating was added, however, it was probably a stone front windowed like the solitary one left in the gable over the archway, which of course led into the yard with the stables, &c., beyond, in the picturesque manner common to such houses at that time. The stables now serve as cottages and the main buildings as tenements.

Now up the hill again, passing on our left the "Bull" inn, a more modern but yet ancient red-brick building whose successful competition strangled the life out of the rival we have just visited; past the Tolsey again and the Cirencester Road, in which is the old cottage illustrated above.

Nearly at the top of the hill we find



COTTAGE ON THE CIRENCES-TER ROAD.

another charming house, or rather two, with projecting shops and pent roof like those already noticed, and a stumpy little column at either end. The gables above are simple but well-proportioned, but, *mirabile dictu*, there is another type of finial at the top.

I think we have now visited the most interesting places in the town, and we should be repaid either by a stroll through the well-wooded grounds of the priory or a look over the old grammar school, which, though doubtless an invaluable institution, is not of great architectural interest. The school stands near the church by the river, and was founded as early as 1571.

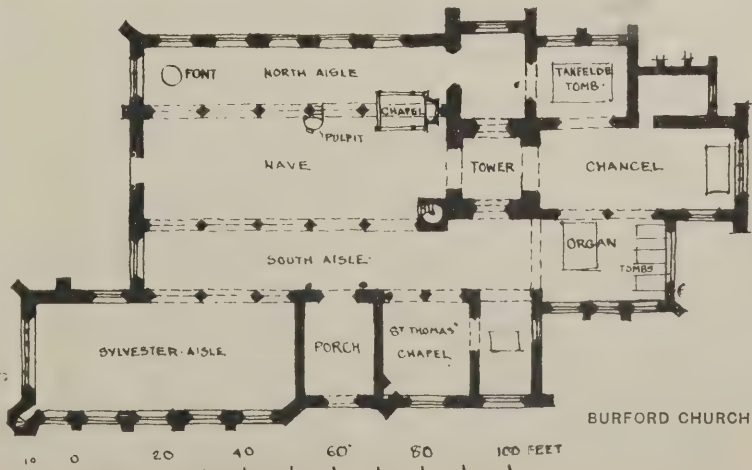
Sentiment naturally plays a part in talking of a town like this, but its old associations are numerous and its picturesqueness undoubted. From the brief description here given I hope it will be seen to be well worthy of a visit.

Bricks and Mortar.

Aphorism for the Week.

The most disgusting of all affectation is the attempt to appear artless. But artlessness is the perfection of art.—LACY GARBET.

Our Plates. The photograph and drawing of Burford Priory are in illustration of Mr. Tanner's article.—The church at Sledmere Park, Yorks, was built for Mr. Tatton Sykes, on his estate. The plan comprises a nave with aisles, and choir beyond. At the west end is a tower, without spire. The church is built of stone and contains some very rich carving, especially the screen dividing the nave and choir, and a triptych extending right across the east wall, below the great window. Mr. Temple Moore, of Hampstead, was the architect.



BURFORD CHURCH.

The Problem of "Barts."

MR. TREVOR LAURENCE, treasurer of "Bart's," has made a public statement in regard to the proposals for rebuilding. Having decided "that it was impossible, in the public interest, to entertain the idea of removing St. Bartholomew's Hospital from its present site" the Mansion House Committee next discussed the question of the adequacy of the site, $6\frac{1}{2}$ acres in extent, to provide room for the buildings of "a hospital with every modern appliance." Although they decided that the site was adequate, it became evident that public and professional opinion was against their conclusion. This led to a conference between the Governors and the medical staff of the hospital. The result was that the Governors, in compliance with the representations of their staff, agreed to endeavour to find a site for the nurses' home (which would have to

authorities of St. Bartholomew's will be acting for the best, in the interests of the public as well as in those of the great institution committed to their charge, if they at once carry out their avowed intention of asking for the necessary funds for the complete, but of course gradual, reconstruction of the hospital on its present site, and for the reconstruction elsewhere, but in the most accessible and convenient position obtainable, of the buildings necessary for the medical school and for the accommodation of nurses."

Rodin.

In proposing the health of M. Rodin at the dinner of "The International" held last week in London Mr. Edmund Gosse said it was nearly a quarter of a century ago that the genius of the great French sculptor was revealed to us. In the Salon of 1881 were those extraordinary

M. Rodin put his mark upon it. It was too often forgotten that the appeal of genius is very diverse. There was a kind of genius which was the slave of man and the indulgence of his prejudices; there was another kind which was the noble companion and friend of his best thoughts; but there was yet another, very rarely revealed as the ages evolved, but, thank Heaven, even nowadays occasionally revealed, which was not the slave, nor the companion, but the tyrant of man's taste. To this class the genius of M. Rodin belonged; he was one of the intrepid conquerors of the world of art. Every artist should live in his intelligence; but never one had done so since the days of Phidias it was M. Rodin. He was not merely concerned with brilliant problems of composition, learnedly carried out, with admirably refined modelling, with high competency of finish. These gifts he possessed



SHIPTON COURT

accommodate a female staff numbering 320) outside the hospital precincts—the remaining area of Christ's Hospital site having meanwhile been bought by the Post-Office. Mr. l'Anson, architect to "Bart's," with whom Mr. Rowland Plumbe was temporarily associated, had prepared plans for the distribution of the new buildings contemplated, but when the Governors proposed to put the nurses' home outside the hospital area these plans necessarily required revision. They have now been carefully revised, and block plans showing how the hospital buildings of the future may be distributed in more ways than one have been prepared and submitted to the Medical Council. The estimated costs have been calculated, and will be put before the meeting which is to be held on the 26th of this month. The "Times" says in a special article: "Upon the whole, then, in view of all the circumstances of the case, there seems to be no doubt that the

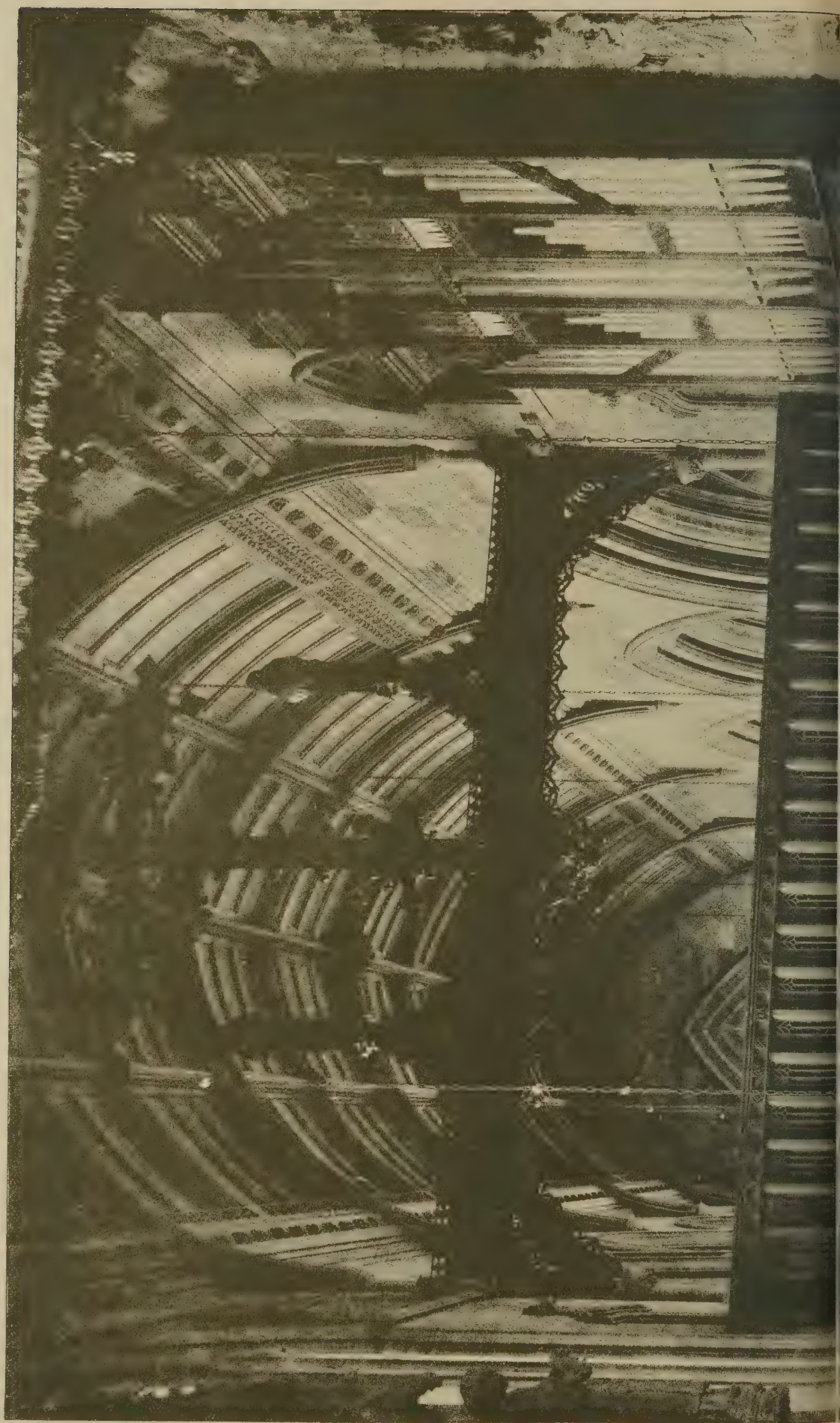
works, "La Création de l'Homme," and, in bronze, the "St. Jean prêchant." It would be self-deception of memory if we pretended that we then saw in those works all that we saw in them to-day. There were young sculptors, like Coutan, like Lansom, like the unfortunate and gifted Idrac, who exhibited far more rhythm of line, a far more delicate finish of forms. But these tormented arid figures of the new sculptor, if they scandalized and repulsed the eye trained in the academic tradition, at least arrested its attention. Who among those present could remember what graceful contribution Idrac made to the Salon of 1881? Who could forget the wasted and bitter anchorite which St. John appeared to M. Rodin's energetic vision? He could not conquer our convention at a blow, but he could shake it to its foundation, and he did. No one in the intelligent world looked at sculpture to-day exactly as he did before

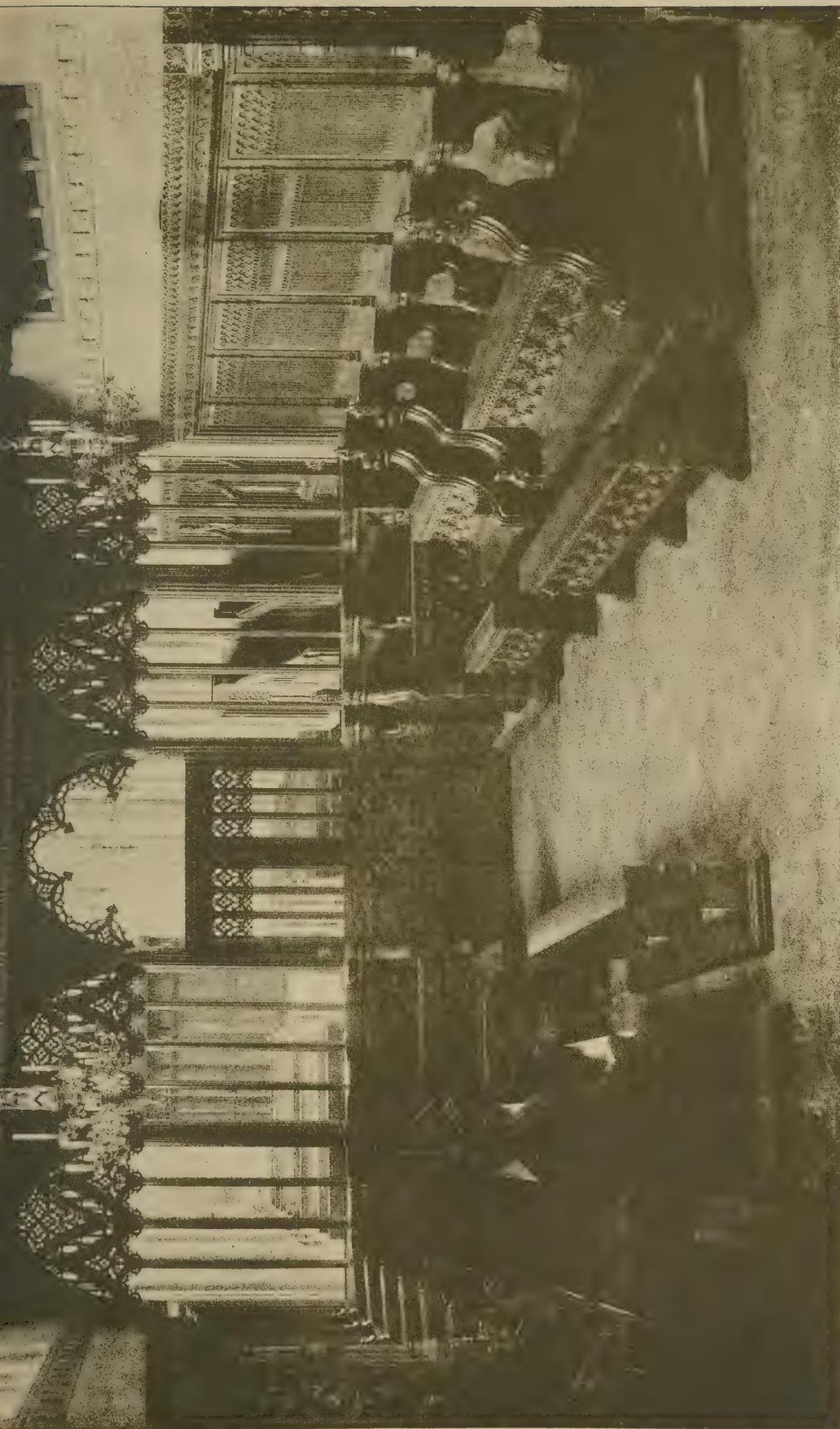
but it was not of these that we thought when his work affected us most deeply. With astonishment and joy we saw him labouring in the refulgence of the uncreated image, while his soul was visibly torn with agony until he could bring his vision to the birth. He sculptured as if he were singing, and this lyrical rapture, which marked what he produced, was one of the most striking of his characteristics. We used to think of sculpture as of an art in dignified repose. We turned to M. Rodin, and we saw torture and ecstasy, languishment and terror—all the primal passions of our race quivering on the surface which envelope the vehement creation of his dreams.

The Hospice, Edinburgh.—New premises for the nursing home for women have been opened in High Street, Edinburgh, and will be known as the Hospice. Mr. H. Tarbolton was the architect.

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Wednesday, January 20th, 1904.*





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CHURCH AT SLEDMERE PARK, YORKS. TEMPLE MOORE, ARCHITECT.

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R.I.B.A.

Prizes and Studentships.

A MEETING of the Royal Institute of British Architects was held on Monday evening at 9, Conduit Street, W., the chairing occupied by Mr. John Slater, B.A. The deed of award of prizes and studentships for 1903-4 was read as follows:—

Institute Silver Medal and 25 Guineas for an essay on "The Delineation of Architecture" (8 essays submitted):—The Council unable to award the prize but grant a medal of merit and 10 guineas to Mr. Claude Batley, of Ipswich.

Institute Silver Medal and 10 Guineas for measured drawings (12 sets submitted):—Mr. Laurence M. Gotch, of Ealing. Certificates of hon. mention to Mr. Gerald S. Tomlons, of Manchester, and Mr. C. Lovett Hill, of London.

Soane Medallion and £100 (for Continental travel) for the design of a university theatre on an open site (14 designs submitted):—Mr. Frederic J. Horth, of Hull. Certificate of hon. mention, Mr. David Smith, of Dundee.

Arthur Cates Prize: 40 Guineas (4 sets of drawings received):—Not awarded, but a grant of 20 guineas to Mr. F. Winton Newman, of London, and a certificate of hon. mention to Mr. Baxter Greig.

Owen Jones Studentship: Certificate and £100, for travel and study of colour (5 sets of drawings submitted):—Mr. W. Davidson. Medal of merit, Mr. H. Morley.

Pugin Studentship: Silver Medal and £40, for travel in the United Kingdom (3 sets of drawings submitted):—Mr. F. C. Mears. Medal of merit, Mr. W. S. A. Gordon.

Godwin Bursary: Silver Medal and £65, for travel outside the United Kingdom (2 sets of drawings received):—Mr. H. Phillips Fletcher, of London.

Tite Prize: Certificate and £30 (for travel in Italy) for the design of a crescent in a large city, according to the principles of Palladio, Vignola, Wren or Chambers (3 designs submitted):—Mr. Heaton Comyn, of London. Medal of merit, Mr. Arthur D. Nicholson, of Glasgow.

Grissell Gold Medal and 10 Guineas, for the design of a timber spire or lantern termination to a tower (14 designs submitted):—Mr. J. William Hepburn, of London. Medal of merit, Mr. Arthur J. Barclay, of Aberdeen.

Ashpitel Prize (of books value £10):—Mr. F. Winton Newman.

A paper on

Architecture in Lead

was read by Mr. J. Starkie Gardner, with lantern illustrations. The author first gave some details of the lead-mining industry in Britain since the earliest times, and referred to the use made of the metal in architecture by the Greeks in the Mycenaean period. Lead quickly tarnishes, but freshly melted or cleaned its surface is lustrous as silver; and this might perhaps be preserved by coating with vitreous glaze dissolved in fluoric acid.

The Greeks first applied lead decoratively to architecture. An Ionic capital from the temple of Ephesus, in the British Museum, has its volutes inlaid with a fillet of lead. The idea of inlaying lead into stone may have reached the Anglo-Briton, the most expert metal-worker of that time, from the East. William of Malmesbury describes an ancient pavement in Glastonbury Abbey formed of "stones designedly inlaid with triangles and squares and figured with lead." The finest existing example of fourteenth-century work is that now in the cathedral of Rheims. A sparing use of lead was made in ceilings and vaultings, where the gilded stars are of lead. The pome-

granate pendants and leaves at the inter-sections of the geometric ceiling to Cardinal Wolsey's cabinet at Hampton Court are of lead, like the enrichments to the ceiling of the Chapel Royal, St. James's. Windows, like those in Salisbury Cathedral, often depended for the decorative effect entirely on the grace and intricacy of their leaded lines. The Romans first employed a method of decoration used later by Sussex and other mediæval ironfounders. Small objects in relief, such as scallop-shells, beaded rods, plain rings, &c., were impressed as decoration into the beds of sand upon which the sheets were cast.

The author touched on the uses of lead in relation to the plumbers' craft, which was first mastered on a grand scale by the Romans. In England lead pipes have been found in Roman foundations, and at Bath is a massive water channel of lead an inch thick. Water was brought into London houses by lead pipes for the first time in 1852 by Peter Morris, a Dutchman. Leadenspouts for relieving the gutters formed at times a picturesque feature in mediæval buildings. Of greater interest were the conduits or central distributing fountains which generally occupied some accessible place in one of the courts of every princely dwelling.

In the seventeenth and eighteenth centuries much of the purely decorative statuary produced in England was of lead, especially the massive equestrian statues, the first of which, that of Charles I., by Hubert Le Sueur, was cast near Covent Garden in 1633 and erected by Charles II. at Charing Cross in 1674. The statue—horse and man—is still the finest we possess.

For the garden lead reigns supreme. Softer and greyer in tone, more yielding, less costly, and less pretentious than bronze or marble, lead seems, above all other materials, to lend itself to the garden.

As regards lead architecture, Eusebius speaks of lead roofs in the third century; and the domes of the Holy Sepulchre and Sta. Sophia are still so covered. The roofing in the seventh century of the Church of York with lead, by Wilfrid, and the sheathing of that of Lindisfarne, by Eadbert, both walls and roofs, must have been new and unusual occurrences to have been chronicled by Bede. The development of pointed church architecture in the thirteenth century afforded much scope for a display of leadwork. The roofs rising to a great height, and becoming increasingly rich, with turrets, flèches, crests, finials, buttresses, parapets, crockets, gargoyles, and above all, the lofty steeples, often clustered in threes, as at Lincoln, Ripon and Canterbury, absorbed more lead and afforded greater areas for display than ever. In France the lead roofs appeared to form almost half, and by no means the least picturesque half, of many of the great sacred buildings. The laying of the lead in strips, vertically or diagonally, formed with their rolled overlaps fretted lines of shadow on the bleached white surfaces. Stowe describes the bell-tower of the Priory Church of St. John as "graven, gilt and enamelled, to the great beautifying of the city, and passing all other that I have seen."

The Palace of Sheen, rebuilt by Henry VII., seems to have been the earliest revival of great displays of lead in domestic architecture in England, since the roofing with lead of a building earlier in the century had resulted in its being distinguished as Leadenhall. The Palace at Hampton Court, though not completely destroyed like Richmond, is shorn of the lead-covered cupolas, octagons, turrets and louvres, bedecked with finials and pennons, all glittering in gold and armorial bearings, which rendered it the most attractive sight in all England.

But it was only where timber framing entered largely into the construction that the

lead was carried down below the roofs and a truly lead architecture could be revived. The rural retreat of Nonsuch, a veritable palace of lead, dazzled the imagination and baffled description.

The stanchions and outposts of the banqueting hall were "all covered with lead, as were the whole of the wooden battlements," and the upper storeys were "buted round with frames of wood, covered with lead"—"the chiefe ornament of the whole house of Nonsuch."

In 1491, Thomas Wood, a goldsmith and sheriff of London, built a row of shops and dwellings in Cheapside, fronted with lead, which every chronicler speaks of as beauteous and glorious to behold. The front was gilded, and it was known as Goldsmith's Row. Stowe describes it as the most beautiful frame and front of fair houses and shops in London or elsewhere in England. It contained ten dwelling-houses and fourteen shops, all in one frame, uniformly built four storeys high, beautified towards the street with the Goldsmiths' arms, and the likeness of woodmen, in memory of the founder's name, riding on monstrous beasts—all of which was cast in lead, richly painted over and gilt. It was re-gilt in 1594 by Sir Richard Martin, Lord Mayor, and was destroyed in the Great Fire of 1666.

A discussion followed in which Mr. Phené Spiers, Mr. Ernest George, Mr. Maurice B. Adams, Mr. W. H. Seth-Smith, Mr. Hudson and Mr. Slater took part. Replying, Mr. Gardner said he did not think the extraction of silver from modern lead had anything to do with the deadness of the latter, as oxide of silver was black; possibly the removal of the arsenic in it was the reason. Lead might be cast about $\frac{1}{4}$ in. thick for bas-relief and in sheets of any handy size—about 5ft. by 4ft.

THE TRAINING OF A SURVEYOR.

A LECTURE on "The Training required for the Profession of a Surveyor" was read last Thursday before the Sheffield Society of Architects and Surveyors by the vice-president, Mr. E. Holmes. After referring to the immense increase in the number and importance of the matters with which a surveyor had to deal to-day as compared with the past, when his duties were as a rule limited to the actual measuring of land and the care of roads, Mr. Holmes explained how by the advent of railways and the centralization of dense masses of population the necessity had arisen for public works and undertakings of all kinds, to cope with which there had been passed various Acts of Parliament, which very much augmented the extent and responsibility of a surveyor's duties.

The lecturer discussed the requirements contained in the various sub-divisions under which a surveyor might be admitted by examination into the Surveyors' Institution, and taking the "valuation sub-division" as the one containing the subjects with which an urban surveyor is brought most into contact in the course of practice, he considered in detail the following questions, with regard to which, in his opinion, the urban surveyor should make himself competent to deal:—Law of landlord and tenant, law of fixtures, law of dilapidations, law of easements and riparian rights, law of copyholds, timber measuring and valuing, drainage and sanitation, principles and practice of valuation, compulsory purchase Acts, development of building estates, arbitrations, mensuration and land surveying, report writing. Having suggested suitable text-books to be used in the study of the subjects, he proceeded to advise as to the best method of study, strongly urging systematic application and not cursory reading.

MODERN LONDON BUILDINGS.

(Continued from p. 163, No. 454.)

The following lists have already been published:—E.C. district: Public and semi-public buildings, March 25th, 1903; domestic and religious buildings, colleges and schools, April 1st; business premises, April 15th, April 29th and May 13th; hotels, restaurants, &c., May 13th. E. district: Public and semi-public buildings, June 3rd and August 5th; religious buildings, colleges and schools, July 8th; business premises, domestic buildings, hotels, restaurants and public-houses, August 5th. S.E. district: Public and semi-public buildings, August 5th and 19th; religious buildings, August 19th; business premises and domestic buildings, September 2nd; colleges and schools, and hotels, &c., September 16th. N. district: Public and semi-public buildings, October 7th; religious buildings, October 21st.

N. DISTRICT: SCHOOLS AND COLLEGES.

BUILDING.	ARCHITECT.	APPROXIMATE COST.	REMARKS.
1875. Stoke Newington Board Schools, Gainsborough Road.	E. R. Robson	£ 5,930	Accommodation is provided for 730 children at a cost of £10 11s. 5d. per head, including site, &c.
1876. Board Schools, Gransden Road, Poole's Park, Holloway.	E. R. Robson	7,296	The schools will accommodate 716 children.
1878. Board Schools, Caledonian Road, Islington.	E. R. Robson	11,010	Accommodation is provided for 1,150 children.
1879. Collegiate School, Camden Town.	E. C. Robins	15,000	
1879. Board School, Hanover Street, Islington.	E. R. Robson	—	The schools are built of stock brickwork and will accommodate 828 children.
1881. St. Katherine's Training College for School Mistresses, Tottenham.	Sir Arthur Blomfield	—	The accommodation is for 100 students. Connected with the college by a covered way are schools for girls and infants.
1887. Royal Masonic Institution for Boys, Lordship Lane, Wood Green	Dunk & Gedens	—	
1884. Board Schools, East End, Finchley.	Dunk & Gedens	7,962	The schools accommodate 660 children in classrooms, and 231 more if the hall is used. The building is one storey high.
1887. Stroud Green High School for Girls.	W. S. Wilson and J. W. Stephens	2,400	The building is in stock brickwork and Newbiggen light brown stone, the gables being in rough-cast. The accommodation is for 300 scholars.
1888. Congregational Schools, Stroud Green.	J. W. & R. F. Beaumont	—	In red brick with Bath stone dressings.
1888. Higher Grade Schools, Wood Green.	A. Morris Butler	17,000	Accommodates 900 children: 450 girls on the ground floor and 450 boys on the first floor.
1889. Tottenham Board Schools, Seven Sisters Road.	Charles Bell	12,963	Accommodation is provided for 1,500 children on three floors. The area of the site is one acre.
1893. Board School, Falkland Road, Hornsey.	Charles Bell	28,478	Accommodation is provided for 1,475 children.
1894. Board Schools, Bounds Green Road.	E. H. Lingen-Barker.	14,800	
1894. Northern Polytechnic, Holloway Road.	Charles Bell	30,000	All the recreative and social rooms are on the ground floor, the various classrooms and workshops placed in three blocks of three floors each. The Great Hall accommodates about 800 persons, in addition to an orchestra for 250, and has a spacious bandroom under the orchestra. The Holloway Road front is of red brick and Bath stone.
1897. The Stationers' Company Schools, Hornsey.	G. Gordon Stanham.	14,000	The building covers an area of 7,600 sq. ft. and accommodates 250 scholars. The design is fourteenth-century Gothic.
1897. Board Schools, Woodstock Road, Holloway.	Mitchell & Butler	24,218	Accommodation for 1,357 children. The central hall system was adopted.
1897. Campsbourne Bd. Schools, Hornsey.	H. Chatfield Clarke	20,467	The building comprises a site of 2½ acres. It accommodates 1,400 children and is arranged in two blocks, one containing a two-storey building for the boys and girls, and the other a one-storey building for the infants. There are separate buildings for manual instruction and for cookery.
1901. Board Schools, Stoke Newington Road.	T. J. Bailey	40,000	Accommodation is provided for 608 boys and 308 infants. There is also a building for deficient children.
1902. Baptist Schools, East Finchley.	George Baines & R. P. Baines.	3,634	
1902. Finsbury Pupil Teachers' Centre, Offord Road, Islington.	T. J. Bailey (Architect, L.S.B.)	21,700	Accommodation for 312 students.

N. DISTRICT: BUSINESS PREMISES.

1876. Waterlow's Printing and Stationery Works, Clifton Street.	W. Ward Lee	£ 44,209	There is a working-room containing 19,000 sq. ft., for 2,000 persons: in all there are 130,000 sq. ft. of available space. The walls are entirely of Beart's perforated bricks.
1881. Vinegar Factory for Crosse and Blackwell, Brewery Road, Caledonian Road.	Roumieu & Aitchison	—	Faced with red pressed bricks, with Portland stone bands and dressings. There is a tower 75ft. high.
1884. London and County Bank, Pentonville Road.	Glover & Salter	5,000	Manager's residence on upper floors. Front of Portland stone.
1889. South-Western Bank, Broadway, Crouch End.	George Truefitt	—	Portland stone and red brick. Manager's residence over.
1897. Business Premises for W. Beale, Corner of Holloway and Tollington Roads.	Frederick Wallen	30,000	The buildings, which are six storeys high, consist of a block of shops and an electric-lighting station. Part of the building is set apart for refrigerating perishable goods.
1891. The Highgate Dairy for C. Davies, South Grove.	Ernest H. Abbott	3,000	Faced with red Leicester pressed bricks, moulded cornices, &c., and rough-cast gables: roofs of green Welsh slates.
1892. Business Premises for J. Southern, Market Road, Caledonian Road.	R. Owen Allsop	—	The ground floor of this building is designed to house pantechicon vans.

N. DISTRICT: BUSINESS PREMISES—cont.

BUILDING.	ARCHITECT.	APPROXIMATE COST.	REMARKS.
1893. Business Premises for Jones Brothers, Holloway Road.	Davis & Emanuel	£ —	These buildings are six storeys high. The basement is lined with white-glazed bricks and forms a provision sale room, containing a refrigerating chamber. The three upper floors are residential. Part of the second floor contains recreation and billiard-rooms for the employees of the firm. The street front is of malm bricks and Beer stone dressings, the weathered portions being of Portland stone. The general façade rises to 60ft. and the clock tower to 100ft.
1894. South - Western Bank, Corner of Holloway Road and Parkhurst Rd.	Truefitt & Watson	—	
1897. Bank Buildings, Stroud Green Road.	Truefitt & Watson	—	Lower portion of the building entirely in white Mansfield stone; upper portion of red brickwork, with stone dressings.
London and Provincial Bank, Enfield.	W. Gilbee Scott	—	The banking chamber is 16ft. high, but the strong-room, lavatories, &c., behind it are only 9ft. high, allowing space for a mezzanine above containing the kitchen and its offices. The remainder of the site is occupied by twenty separate offices.

N. DISTRICT: DOMESTIC BUILDINGS.

1875. Dwellings for the Working Classes, Goswell Road.	Henry Macaulay	£ —	
"Spring Bank," Haverstock Hill.	J. M. Brydon	1,300	Of brick, in the Queen Anne style.
1876. Aged Pilgrims' Asylum, Hornsey Rise.	W. F. Boreham	19,800	Accommodation for 120 pensioners.
1880. "The Hollies," Finchley	John Slater	—	
1884. Gibsons' Buildings, Stoke Newington.	Davis & Emanuel	10,843	
1887. Premier Buildings, Waterloo Terrace Islington.	Henry W. Dobb	—	
1891. Printers' Almshouses, Wood Green.	Charles Bell	—	Four houses to existing buildings, of brick and Bath stone.
1892. "Glenroy," Etchingham Park, Finchlev.	E. W. Poley	—	Of red brick and rough-cast with half-timbered gables; roofs covered with Broseley tiles.
1895. Almshouses for the Skinners Company, Palmer's Green.	W. Campbell Jones	—	There are suites for eighteen occupants, each having a bedroom, sitting-room and scullery. At the end of the main walk is a common room. Of red bricks with Ancaster stone dressings. All external woodwork is oak, and the gable decorations are in cement.

N. DISTRICT: HOTELS.

1890. South Place Hotel, Finsbury; W. M. Tetts. Of red brick and Monk's Park stone.—1893. "Green Dragon" Public-house, Winchmore Hill; G. J. & F. W. Skipper. "Rochester Castle" (rebuilding), High Street, Stoke Newington; Crickmay & Sons. Carving by M^{rs}s. Harry Hems & Sons, of Exeter.—1898. The "Old Crown" Inn, Highgate Hill; G. Gard Pye.—1900. Marlborough Hotel, Upper Holloway; George Hubbard.

N.E. DISTRICT: PUBLIC AND SEMI-PUBLIC BUILDINGS.

1876. Lecture Hall, North Street, South Hackney.	H. Jarvis & Son	£ 800	The hall is 6ft. by 3ft. by 30't high.
1882. Dalston Junction Turkish Baths.	J. Hatchard Smith	—	The cooling-room is 32ft. by 32ft. by 16ft. high. Facings of red brick, with yellow malm arches and cornices, and a cupola of cement.
1884. Shoreditch Workhouse, additional buildings, Reeve Street.	Lee & Smith	20,000	The additional buildings consist of three blocks. The principal block for able-bodied paupers is 70ft. long and four floors high in addition to the basement. The upper floors consist of dormitories, the accommodation being for 150 inmates.
1887. Town Hall, corner of Paradise Row and Cambridge Road.	Isaacs & Florence	—	The hall is 16ft. by 49ft. by 36ft. high, and accommodates 1,700 persons. The business offices are on the ground floor, including a council room 32ft. by 20ft. by 15ft. high. The building is of red brick and Portland stone.
1892. Free Library, Kingsland Road, Shoreditch.	R. J. Lovell	—	The library buildings consist of converted gaswork buildings, the board-room of the gasworks having been made into a reference library.
1893. Shoreditch Music Hall	E. E. Niblett	—	There are 1,326 seats. The stage opening is 27ft. by 22ft. 6in., and the gridiron is 65ft. high.
1894. Public Library, Walthamstow.	J. Williams Dunford.	—	Reading-room 78ft. by 41ft. by 30ft. high.
1896. Hackney Union Infirmary	W. A. Finch	—	Accommodation for 220 patients on ground and upper floors, the basement being used for stores, &c.
1897. Baths and Washhouses, Cheshire Street, Bethnal Green.	R. Stephen Ayling	12,710	There are 10 men's first-class baths and 20 second-class baths; 5 women's first-class baths and 11 women's second-class baths. The laundry contains 40 washing compartments. Materials—red bricks with Portland stone dressings and plinths.
Public Baths, Lower Clapton Road, Hackney.	Harnor & Pinches	65,000	The buildings contain men's first- and second-class swimming baths, a ladies' swimming-bath, 15 men's first-class and 40 second-class slipper baths, 7 women's first-class and 20 second-class slipper baths, and vapour, spray and shower baths.
Theatre of Varieties, Dalston.	Wylson & Long	14,500	
1898. New Pavilion at Hackney Infirmary.	W. A. Finch (architect to the Board).	33,000	The pavilion, which is situated at the corner of Sidney Road and High Street, is built of brick. The basement is fitted as stores, and the floors above accommodate 228 patients.
Nurses' Home, Shoreditch Workhouse Infirmary.	F. J. Smith	12,500	Connected to the infirmary by a glass arcade. The building is four storeys high and contains 60 rooms, accommodating 70 nurses.
1899. Public Baths and Washhouses, Pitfield Street, Shoreditch.	Spalding & Cross and H. T. Hare.	—	The accommodation includes: Men's first-class—20 private baths, 1 public swimming-bath 100ft. by 40ft. (69 boxes). Men's second-class—37 private baths, 1 public swimming-bath 75ft. by 35ft. (56 boxes). There are 5 ladies' first-class private baths and 16 second-class. Public laundry for 50 washing compartments and 50 steam-drying horses.
Workhouse Infirmary, Bethnal Green.	Giles, Gough & Trollope.	198,307	The infirmary will eventually provide accommodation for 750 beds. Running the length of the site is a main corridor of 760ft.; a deviation is made to allow of its passage through the administrative block, which occupies the central position.
1900. Electricity and Refuse-Destruction Works, Millfields Road, Clapton.	Gordon & Gunton	—	
Empire Theatre, Mare Street, Hackney.	F. Matcham	—	The theatre has a sliding roof.
Shoreditch Town Hall Extension.	W. G. Hunt	30,000	The extension is severely classical in style, to harmonize with the existing building; a tower will be erected at the junction of the old and new structures.

(To be continued.)

"THE ARCHITECTURAL REVIEW."

A NEW cover, additional pages, better paper and the best possible printing will characterize future numbers of THE ARCHITECTURAL REVIEW, beginning with February. The cover will be printed in red and black on a parchment-coloured paper, with some very beautiful lettering top and bottom and a medallion portrait of Inigo Jones in the centre: this latter having been drawn by Mr. Muirhead Bone (through the courtesy of Sir Purdon Clarke) from the original in wood at South Kensington. The "Review" is already known for its fine illustrations, but with the best "art" paper and every modern facility for printing these will be produced still more admirably; while the increase in the number of pages will allow many more illustrations—chiefly of modern work—to be introduced. These several improvements will make the "Review" yet more highly valued by architects and artists who desire to see the best that is being done in architecture throughout the countries of the world, while at the same time having put before them new phases of opinion in regard to old work, criticisms of current movements by leading architects, reviews of the most notable new books, and everything else of importance which concerns them in regard to the art of architecture. The new issue of the "Review" will be at one shilling.

Enquiries Answered.

The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Examinations for Sanitary Inspectors.

NEWPORT, MON.—ENQUIRER writes: "Which of the two examinations—the Sanitary Engineers' or the Sanitary Institute—would be the better for a young man going in for a sanitary inspector's certificate?"

The Sanitary Institute (Parkes Museum, Margaret Street, London, W.).

Altering Colour of Brickwork.

HAMPSTEAD.—A. C. writes: "I should like to know if there is any wash treatment by which external brickwork can be turned a French grey colour."

We can only suggest the use of lime white mixed with colour to the right tint.

Extras.

MANSFIELD.—PAINTER writes: "I have recently finished a contract upon which a dispute has arisen between the architect and myself (through the builder) respecting charges I make for a considerable amount of extra work. I have been asked to accept the architect's award, but do not feel inclined to do so, as I consider my prices reasonable. The architect says the matter must now be settled by arbitrators named by him in the general conditions, &c., signed by the builder. I may say that I have not signed or even seen these conditions at any time, my estimate for the original contract work being based upon a copy of painters' quantities supplied to me by the builder. Am I compelled to submit to the account going before the architect's arbitrators, or can I claim an independent one? In the quantities certain papering (plain tinted) was given, the paper to be p.c. 9d. a piece—to this I added profit on paper 3d. and hanging 8d.; total 1s. 8d. Lining paper was afterwards hung and other better papers were ordered by me and hung

to the architect's orders. I charged these at list price. The architect asked me to forward him nett prices. He now sends me a statement allowing 10 per cent. profit on same. Am I not entitled to more than this, bearing in mind what I allowed as profit in contract papering?"

You are responsible to the builder only for your tender, and an action brought by him alone will lie against you. As regards extras, we think the 10 per cent. profit allowed you is a fair offer.

Fixing a Curb.

BRISTOL.—A SUBSCRIBER writes: "I have to fix a brass curb on a marble curb around a dining-room grate. The brass has already been fixed once or twice in cement, but this has been broken and the curb has come out of its place. Which would be the best way to fix it?"

The best plan would be to rivet iron bars on to the standards, pass them through the marble curb and bolt to the underside of the hearth.

Masonry and Brickwork Diagrams.

DULWICH.—W. T. C. writes: "Kindly name a book to aid me in preparing a 'sheet of diagrams of constructive masonry or brickwork, such as arches or groined vaults, with the projection of arch and vault stones,' for the R.I.B.A. final examination, testimony of study."

"40 Plates on Building Construction," by Charles F. Mitchell, price 4s. 3d., or 8s. 6d. bound in cloth, post free, from these offices.

The Academy.

FLEET.—M. S. A. writes: "Kindly state what are the requirements as to frame, margin, &c., for architectural drawings submitted to the Royal Academy."

All works intended for the Academy must be sent there *only* on the days appointed (to be announced later). They must be delivered unpacked and must have the title, &c., written on the back and on a label to hang over the front, and a printed form giving the same particulars must be sent to the secretary at Burlington House (forms and labels can be had *during March only* on receipt of a stamped addressed envelope). All drawings must be in gilt frames, and it is expressly pointed out in the "Notice to Exhibitors" that excessive breadth in frames or margins, as well as projecting mouldings, may prevent them being hung as well as they might otherwise be. Drawings already publicly exhibited in London are not admissible. Further particulars can be had from the secretary.

Lead and Iron on a Flèche.

CONWAY.—H. L. N. writes: "I am doing a flèche; up the centre is a 4in. by 4in. teak post into the top of which is screwed a small cross finial and a little way down is an iron ring to prevent the wood splitting. I specified that the lead cone on the top of the slating should be copper nailed immediately under but not touching the iron ring, instead of which the plumber has very neatly dressed the lead over the iron 'ring' and over the top of the post, making a hole for the finial to pass through. This of course makes a good and more watertight job than my idea, but can you put lead next to iron in this way? I have always been told that lead and iron acted against one another and that the iron wasted away, as one often sees with iron railings fixed to stone curb in lead. Yet I have seen cases of lead gutters supported on iron brackets with no harm following."

There is not much danger to be feared if water does not come in connection with the iron and lead so as to form a couple and so produce electrolysis, that is to say, if the lead is dressed down a good way over the iron

ring, but all danger might be avoided by nailing wood fillets around the iron so that the lead cannot come into connection with the iron. If a couple is formed not much damage is likely to result for twenty-five to fifty years, but in that time the slow insidious action will have come to a head.

Open Roof for Village Hall.

BRISTOL.—CHIP writes: "The accompanying sketch (not reproduced) shows a section through the roof of a small village hall, the Building Committee of which are anxious to avoid using iron tie-rods. Do you consider that without these there is a danger of the walls spreading owing to thrust of roof? The site will not permit the use of buttresses on the outside of the walls. Is there a simple rule for ascertaining the necessary sizes of roof timbers with regard to varying spans?"

The proposed roof-truss is totally inadequate. If the collar-beam is brought down to one-third of the height and curved trusses are bolted in the angle, it may answer without tie-rods; otherwise they are absolutely necessary. A collar-beam truss should not be used for more than 18ft. span, and then special precautions have to be taken. There is no simple rule for ascertaining the scantlings of roof timbers without the exercise of judgment at the same time. King-post trusses may be used from 20ft. to 30ft. span and Queen-post trusses from 32ft. to 42ft. span. Within these limits the trusses of both kinds may have a thickness varying from 4in. at the lower limit, with $\frac{1}{2}$ in. extra thickness added for each 2ft. span. The several timbers would then be made of a proportional size in their other dimensions—say for King-post, tie-beam twice the thickness in depth, struts half the thickness in depth, King-post shank same as struts plus 1in., head twice width of shank, principal rafters 4in. deep for 20ft. span, adding $\frac{1}{2}$ in. for each 2ft. beyond. For Queen-post trusses, twice the thickness plus 1in. in depth, Queen-post shank square, struts half the thickness in depth, principal rafters square, straining-beam 3in. less in depth than the tie-beam, straining sill 3in. thick. There is no general rule for the scantlings of open-timber trusses.

HENRY ADAMS.

Law Cases.

A Wharf a "Factory."—The case of *Barrett v. Kemp Brothers* (builders and contractors, lessees of a wharf on the Medway) came before the Court of Appeal last Thursday. It was an appeal from the decision of the judge of the Sittingbourne County Court, who held that the applicant was entitled to compensation under the Workmen's Compensation Act, 1897. The applicant sustained an injury by accident while engaged in breaking stones upon a private road within the curtilage of the wharf, and the county-court judge held that the employment on the road leading to the wharf was employment on or about the wharf, and that the wharf was a factory. It was admitted that if the wharf was a factory the employers were the undertakers in respect thereof.—The Court dismissed the appeal, the Master of the Rolls holding that the county-court judge was right and that the accident happened on a road within the curtilage of the factory.

The G.P.O.—A correspondent observes that whereas in the original building of the General Post-Office, London, designed when Greek architecture was much more carefully studied than it is now, regard was had to the principles of entasis, the new upper storey is erected bolt upright, and consequently a discordance is created between the lines of the two portions.



SITON FARM
FEDLES COMBE
SUSSEX

THE RIGHTEOUS LAW OF LIGHT.

IN a letter to the "Times" on this subject a correspondent signing himself "Auditeram Partem" says in reply to another correspondent: "He appeals for an alteration of the existing law upon grounds of public policy; and it is precisely on those grounds that I propose to meet him. To begin with, he erroneously pretends that the law as to ancient lights is a relic of the feudal past, and he terms it 'an absurd anachronism'; whereas, as a matter of fact, it rests upon the fundamental right, which is the basis of all civilized society, of a man to possess and enjoy without disturbance or molestation that which he has lawfully acquired or contracted for. And your correspondent entirely ignores the important fact that an occupier of premises only acquires the right to ancient lights by virtue of an uninterrupted occupation of twenty years. If a capitalist or group of capitalists were to begin, for their own personal ends, to carry out extensive building schemes by unscrupulously trampling under foot, without let or hindrance, the interests of their neighbours, they can conceive nothing more calculated in the long run to injure the welfare of the adjoining community in general, whose interests your correspondent professes to advocate. We should speedily have a state of things similar to that which exists in America, where individual interests are annihilated by huge trusts and combines engineered by more or less unprincipled financiers."

Mr. Delissa Joseph, F.R.I.B.A., observes that when the Prescription Act gave the right to the owner of a dominant tenement to acquire rights of light over a servient tenement, so long as those lights had been uninterruptedly enjoyed for nineteen years and one day, it could not have been conceived how seriously the application of this right would affect the development of a great city such as London.

That which is now desired is for new legislation to provide (1) that the Prescription Act shall, after a given date, cease to apply to large towns and cities, and thus check the growth and acquirement of new ancient lights; and (2) that a simple procedure shall be provided for adjusting the rights of such ancient lights as already exist, such procedure being founded upon that provided by the London Building Act of 1894 for dealing with party-walls, in which there are necessarily conflicting interests. This procedure would require the party commencing to build to serve notice on the surrounding parties of his intentions. The surrounding owners would then be required to appoint architects to represent their interests and to meet the architect of the building owner, who would then disclose his proposals. If the respective architects were unable to agree to the adjustment of the respective lines of light or for the compensation to be paid for the easement, they would refer the matter to an architect-arbitrator, who would issue an award. The only appeal from this award would be to a tribunal similarly composed to that which already exists under the Building Act of 1894, consisting of an architect, a surveyor and a barrister, whose decision should be final.

The need of reform has long been recognized by the leading architects, whose practice places them in daily contact with the anomalies which the present state of the law produces; and many of the great landlords, more particularly his Majesty's Commissioners of Woods and the Ecclesiastical Commissioners, have taken the law into their own hands by providing, in all their new leases, that one party shall not acquire rights of light as against the other, and that the measure of respect which one party shall pay to the other shall be adjusted by them, as between their tenants. This is very similar to the system in vogue in Scotland, which requires plans of new buildings to be submitted to the Dean of Guild Court, which

adjusts all questions between adjoining properties as regards provision of adequate light and air-space.

This subject has been debated at intervals by the Royal Institute of British Architects, who have drafted a Bill on lines recommended by Mr. Fletcher Moulton, and have endeavoured, so far unsuccessfully, to get the proposed Bill through Parliament. But it is quite clear that a private Bill such as this will have little chance of becoming law unless it is strongly backed up by the people who suffer most from the present unsatisfactory state of the law; chief among whom are the great landowners, the big contractors and the great commercial houses.

Obituary.

Mr. H. Saxon Snell, F.R.I.B.A., member of council of the Sanitary Institute, died on January 10th at his residence at Putney, aged seventy-four. He was trained in the office of the late Sir James Pennethorne, and subsequently became assistant to the late Sir Joseph Paxton and the late Sir William Tite. For some time he was chief draughtsman in the Science and Art Department, South Kensington. Mr. Snell was a silver medallist of the Royal Academy in 1851. He had practised for more than forty years as an architect and surveyor, and during that time he acted as architect to twenty-seven metropolitan and suburban parishes, and designed and carried out large infirmaries for the unions of St. Marylebone, St. George's, St. Olave's and Holborn. He also designed and carried out the Royal Victoria Hospital, Montreal, and extensive additions to the Victoria Hospital for Children, London, and the Royal Infirmaries at Hull and Aberdeen. Mr. Snell was the author of "Charitable and Parochial Establishments" and (in conjunction with the late Dr. Mouat) of "Hospital Construction and Management."

BRITISH JOINERY AND PROTECTION.

IN the columns of the "Manchester Courier" some correspondence has been going on in reference to the position of joiners under protective tariffs. In reply to Mr. Chiozza-Money, who supports free trade, Mr. C. H. M. Wharton says:—

Mr. Money said that the proof of his contention that imports of cheap joinery would increase the British joiner's work was shown by the fact that whilst imports of joinery had merely increased the imports of purely raw material had gone up by leaps and bounds. His figures do not show it, but I fancy this is due to a clerical error only, and I will therefore assume his assertion to be correct. Now if this contention be maintainable it follows that all you have to do is to stop importing ready-made stuff and the imports of raw material will also decrease, which is obviously absurd, for assuming the cheap joinery to be imported for use and not for firewood, the moment its importation is stopped more raw material must be required, which, being made into joinery by the British workman, supplies the place of the imported stuff.

"Mr. Money can know precious little about the building trade if this statement is a conscientious expression of his opinion. As all know, there are 'jerry' buildings and substantial buildings. It is in the 'jerry' buildings that this imported stuff is mainly used. Just let me explain how the business is worked and how the foreign stuff is used up.

"A speculative builder wishes to put up a row of cottages. He arranges with a capitalist to advance him money, generally at a large interest, on security of the building, in proportion to the amount of work done, getting his advances on completion of, say, foundation, first floor, roof and so on. He makes contracts with the master bricksetter, joiner, plumber, &c., as a rule for labour only, for the reason afterwards explained, at the lowest possible price, so as to receive the highest possible advance for the least possible value. The sub-contractor (say the master joiner), if he supplies materials, has to use foreign ready-made stuff, and in any case cheap labour, if he wishes to make a profit at all, and the person who gets the least benefit is the workman, who has very little to do in putting the ready-made stuff together. Someone is employed to check the measurements for the financier, generally a 'quantities' clerk, who thereby makes a bit of overtime, but no proper architect is employed. When completed the houses are often sold three or four times before the actual conveyance is made out, adding a little each time to the capital, so that when the tenant appears on the scene he gets no advantage whatever out of the cheapness of the materials employed. 'Credit is given to the builder for the materials (or he takes it), but he has to pay wages at the end of the week, and in this sense alone do free imports of joinery encourage the building trade. I think your readers will agree that the less such kind of building is encouraged the better.

"In the better-class building the imported ready-made stuff is little used at present, but the foreigner only wants encouragement. The architect here is the workman's friend. His duties and his interest alike lead to the use of the best materials and the most skilful and careful workmanship. He wishes the building when completed to be a lasting monument of his skill, and it is not his interest to injure the building by reducing the cost, as he thereby reduces his commission. With him it is not the timber imported to-day that is used to-morrow. It has to be well seasoned before he will allow it to be

used. But of course the raw timber must be used in all buildings, good, bad and indifferent. It therefore comes into the country with increasing rapidity, influenced by an increasing population and the increasing wealth (as distinguished from welfare) of this country, whilst the ready-made imported stuff is kept within bounds by the British architect, who although he cannot prevent its importation can prevent its being used.

"Then I hear our opponents say, 'Why do you want any fiscal change in reference to the building trade if the architect is a kind of fiscal comptroller?' and my answer is that it is just in connection with the buildings upon which the poorest workmen are employed that the good offices of the architect are not available. The skilful and fully employed workman is not so selfish that he will refuse to support a cause by which his poorer brethren will be benefited. The more I consider this subject the more curious it appears to me that a trade unionist can fail to be a supporter of tariff reform."

Cornish Granite and Protection.

In a letter to Mr. Chamberlain, Mr. W. E. Clemens, of Penryn, Cornwall, says:—

I am not overstating facts when I say that the granite trade is the stable industry of the town of Penryn and the district around, fully 1,000 persons being employed in various capacities connected with it, and if it should be that this industry should from any cause cease to exist the town and district would soon be in a stagnant condition. And what applies to Penryn applies to other places in Cornwall where granite is raised and worked. It is roughly estimated that those engaged in the granite trade of Cornwall, and in and around Plymouth, just over the border in the adjoining county of Devon, number 3,000.

In regard to the industry at Penryn I may affirm that in consequence of foreign competition the trade here is greatly depressed and the outlook very discouraging.

The chief—I may say the only—competitors are the Norwegians and Swedes, who possess great natural advantages by reason of their chief quarries being easy of access and close to the sea. This, combined with conditions of labour unlike those obtaining in the granite trade here, and the fact that foreign granite can be brought to this country without any duty to pay, makes it possible for the Norwegian granite merchants to beat those at Penryn in competition.

To such an extent has the evil grown that the Penryn granite merchants have been forced to acquire quarries in Norway and employ native labour so as to be able to compete with them, and it would appear that if something is not done this regrettable feature will have to be followed and developed if British granite contractors are not to be completely driven out of the market. And this, too, in face of the facts that the supply of Cornish granite is practically limitless and there are men enough on the spot to work it.

One class of granite, that of kerb, has been declining for twenty years, until now the cutting of kerbing is nearly a thing of the past, the only cause being that the foreigner has made it impossible to compete in the supply of this article.

Under what circumstances I do not pretend to know, but it is a fact that half of the granite used in connection with the Devonport extension scheme has come from Norway. Other instances might be cited showing the same thing, and Devonport is less than fifty miles from Penryn.

The consequence of this state of things is that many granite workers of this town cannot find employment here, and they have to seek it elsewhere, obviously to their own discomfort and disadvantageously to the trade of Penryn.

Keystones.

The First Building on Kingsway is the Messrs. J. Mitchell & Co., sanitary engineer. Mr. H. Tanner, jr., is the architect and Messrs. Sykes & Son are the builders. The premises will be completed early in the Spring.

A School Competition.—In a limited competition for new schools at Withington, Manchester, the assessor has awarded the place to Mr. Ernest Woodhouse, architect, Mosley Street, Manchester, who has appointed architect to carry out the work.

A Partnership between Mr. Ivor Jones, A.R.I.B.A., of Cardiff, and Mr. T. E. Richards, A.R.I.B.A., of Barry, has been formed, the firm will be known as Messrs. Ivor Jones & T. E. Richards, architects and surveyors, 18, St. Mary Street, Cardiff.

A Southport Hotel.—At the last general meeting of the Southport Victoria Pier & Hotel Co. one of the shareholders described the new entrance in Neville Street as "like a piece of bride's cake stuck on a currant cake" while another shareholder thought the new entrance was the most ugly structure ever built.

Vandalism at Greenwich.—At the office residence of the president of the Royal Naval College, Greenwich, the original windows are being removed and plate-glass substituted. The house was built by Charles II. as a palace, and for more than 150 years afterwards was the residence of the Governors of Greenwich Hospital.

Mr. William F. Bird, surveyor to the Midsomer Norton Urban District Council, will retire on March 31st, after thirteen years' service. The council have decided to give him a testimonial under seal, and to appoint him engineer for the Downside and Clapton water scheme, the Westfield sewerage scheme, the new isolation hospital, and the town hall alterations. Mr. Bird proposes to devote himself entirely to private work in the future.

The Reconstruction of the Town Hall, Aberdeen, and the widening of Broad Street are proposed. Plans for three schemes have been prepared, estimated to cost £5,000, £15,000 and £26,000 respectively. The first two were prepared by Mr. John Rust, the City surveyor, and the third and largest by Mr. A. Marshall Mackenzie, A.R.S.A., Aberdeen. It is believed that one or other of the two larger schemes will be adopted.

The Savoy Theatre, which has been closed for about seven months, will, it is expected, be reopened in the course of two or three weeks. The theatre has been in the hands of the builders and the decorators. Three additional exits have been provided for the public, and two new means of escape for the stage; while the lath-and-plaster partitions have been replaced by those of fire-resisting materials. The old winding staircases have been removed, new ones constructed without ugly and dangerous bends, and of fire-resisting material. From the gallery, the upper circle and dress circle one can now reach the street direct, and practically on the level in each case. The heating and ventilation of the theatre have been overhauled and a new hot-water system installed. The foyer, and the theatre generally, has been re-decorated, though the original scheme of colour—Venetian red, old gold and peacock blue—has been retained. An ante-room, decorated in the Adams style, has been provided at the back of the Royal boxes, while two of the stall-tier boxes on each side have been removed and their places taken by extra stalls. The façade of the theatre which looks on the new Savoy Court has been covered with terra-cotta to correspond with the new façades of the Savoy Hotel, which will form the other two sides of the court.

Mr. James R. Rhynd, of Inverness, is the successful architect in the competition for a new library at Parkhead, Glasgow.

Mr. John Gorman, builder, of Leith, died last Wednesday, aged seventy-eight. He retired from business about seven years ago.

An "All British" Cathedral.—Efforts will be made to secure that Liverpool Cathedral shall be constructed of British material and by British labour throughout.

Engineering Standards Committee.—The council of the Institution of Civil Engineers have nominated their president, Sir William White, to fill the place of the late Sir Frederick Bramwell as one of their representatives on the Engineering Standards Committee.

Mr. P. J. H. Cuypers, the Dutch architect, has been nominated for the degree of Honorary Foreign Academician, in view of the election on January 27th. Altogether there are thirteen nominations for two vacancies.

Competition for New Town Hall and Public Library at Torquay.—More than 300 plans of the site and conditions of competition have already been forwarded in response to applications from intending competitors. Designs have to be sent in by the first week in March.

Glasgow Architectural Association.—Prof. Beresford Pite read a paper on "Architecture, Registered or Free," before this Association last Wednesday. He considered that the proper ideal of the architect's education was that of artist and contractor combined. Any proposal to register an architect as an architect was impossible, the profession being one requiring freedom.

The First Ingram House, now being built in Stockwell Road, London, S.W., was to have provided accommodation for 270 lodgers, at an estimated cost of £42,800. So far however, only £31,007 of capital has been subscribed, and the promoters have decided to provide only 208 bedrooms, to have four floors instead of five, and to reduce the cost of building to £33,850. There will be four wings, meeting together in a hall 70ft. square. It will not be ready for occupation much before May next year. Mr. A. T. Bolton, of Westminster, is the architect.

Electric Light at Exeter Cathedral.—Still another of our cathedrals—Exeter—is replacing gas by electric light. By the action of the gas-burners at the top of the nave piers damage has been done to the mouldings of the arches and the vaulting of the aisles. The lighting of the nave by gas was introduced about twenty-five years ago, when the evening services were introduced. The new electroliers (designed by Mr. Pearson) are supported by chains from the vaulting, and we are told that the lighting and arrangement are both very pleasing, the magnificent expanse of vaulting being very finely shown. The whole of the installation is the gift of a citizen of Exeter, Mr. H. A. Willey.

South Shields Municipal Buildings: Tests on the Site.—The South Shields Corporation officials have recently been engaged in applying tests to the ground in Ogle Terrace on which it is proposed to erect the new municipal buildings. The area selected for the test was that upon which the tower, which will be the heaviest part of the new buildings, was intended to be placed. Its weight was estimated at 1,500 tons, and it is proposed that it shall rest on a concrete bed having a total area of 1,936ft., so that the weight of the tower, distributed over this area, would be less than 1 ton per sq. ft. The test applied was equal to 5 tons per sq. ft., and a gradual settlement took place to the extent of 1in., but here it ceased. From borings taken at four different places on the site, clay was found at a depth of 25ft. to 26ft. Mr. Ernest E. Fetch, of London, is the architect of the new buildings.

Builders' Notes.

The Additions to the Dartford Union Infirmary are being warmed and ventilated by means of Shorland's patent Manchester stoves with tiled sides and descending smoke flues, and patent Manchester grates, supplied by Messrs. E. H. Shorland & Brother, of Manchester.

Midland Federation of Building Trade Employers.—In the report of the Midland Centre of the National Federation of Building Trade Employers, presented at the recent annual meeting held at Birmingham under the presidency of Mr. C. H. Barnsley, reference was made to the depressed condition of the industry throughout the Midland Counties, the information from some localities showing that the conditions had not been so discouraging for a long time. The following officers were elected for the ensuing year:—President, Mr. J. Sharman Wood (Worcester); vice-presidents, Mr. H. Willcock (Wolverhampton) and Councillor F. G. Whittall (Birmingham); hon. treasurer, County Alderman J. Bowen, J.P. (Birmingham).

The Fall of a Viaduct.—Mr. C. L. Morgan has reported to the Board of Trade the result of his enquiry into the fatal accident which occurred in November owing to the collapse of the Toddington viaduct on the new line of the G.W.R. in course of construction between Cheltenham and Honeybourne. Four men were killed and seven injured. The report states that the accident did not arise from any defect in design or in the materials used in the construction of the viaduct. The collapse was brought about by the contractors allowing the crane to be placed directly over the crown of arch No. 10, which was not sufficiently backed up in the haunches, and was assisted in part by the mortar not being sufficiently set. The failure of this arch naturally brought about the collapse of the arches Nos. 7, 8 and 9 north of it, and would probably have been followed by others but that after the failure of arch No. 7 temporary struts were fixed to the piers of Nos. 4, 5 and 6, thus taking up the thrust. Nos. 11 and 12 to the south would undoubtedly have followed had not the centres been in and taking the weight.

A Timber Famine.—Mr. J. S. Arkwright, M.P., proposing the toast of the evening at the seventh annual banquet in connection with the Hereford and District Master-Builders' Association held last week, said he was afraid there was no getting away from the fact that within the next thirty years not only this country, but Europe, would be face to face with something like a very serious timber famine. Was it not a fact that in the past five years the price of timber had been getting tighter, and was going steadily up at the present moment in the building trade? Was it not a fact that not only were they getting less timber, but the quality was deteriorating, and that they were now paying prices for timber which was now called first-class, but which years ago they bought at a lower price as second-class timber? The reason was that the timber supply of the world was failing. Seventy-eight per cent. of the timber used in the English building trade was coniferous, and a very great proportion of that came from abroad; and in every contract which the Government made with big firms for the erection of Government buildings there was a clause to the effect that no English timber was to be used. The reason why foreign timber was going up in price was because there was less of it, and because it cost more to put on the market than formerly. The foreign supply was getting less, while English timber—not to put the matter too fine—was not fit to use.

Current Market Prices.

				£ s. d.	£ s. d.
FORAGE.					
Beans .. ..	..	..	per qr.	1 14 0	2 0 0
Clover, best ..	..	..	per load	4 5 0	4 10 0
Hay, good.. ..	..	..	do.	3 12 6	4 0 0
Sainfoin mixture ..	..	..	do.	3 15 0	4 5 0
Straw .. .. .	..	..	do.	1 10 0	2 0 0

OILS AND PAINTS.					
Castor Oil, French ..	per cwt.	1	0	5	—
Colza Oil, English ..	do.	1	3	6	—
Copperas	per ton	2	0	0	—
Lard Oil	per cwt.	2	15	0	2 17 0
Lead, white, ground, car-					
bonate	do.	1	4	10	—
Do. red	do.	1	0	4½	—
Linseed Oil, barrels ..	do.	0	17	10½	—
Petroleum, American ..	per gal.	0	0	7½	0 0 7½
Do. Russian	do.	0	0	5½	0 0 7½
Pitch	per barre	0	8	0	—
Shellac, orange .. .	per cwt.	11	10	0	—
Soda, crystals .. .	per ton	3	2	6	3 5 0
Tallow, Town .. .	per cwt.	1	7	6	—
Tar, Stockholm .. .	per barrel	1	2	0	—
Turpentine	per cwt.	1	13	10½	—

METALS.					
Copper, sheet, strong ..	per ton	71	0	0	—
Iron, Staffs, bar .. .	do.	6	0	0	8 10 0
Do. Galvanised Corru-					
gated sheet	do.	10	7	6	10 12 6
Lead, pig, Soft Foreign ..	do.	11	7	6	—
Do. English common					
brands	do.	11	15	0	—
Do. sheet English 3lb. per					
sq. ft. and upwards ..	do.	14	0	0	—
Do. pipe	do.	15	0	0	—
Nails, cut clasp, 3in. to 6in.	do.	9	5	0	—
Do. floor brads .. .	do.	9	0	0	—
Steel, Staffs, Girders and					
Angles	do.	5	10	0	6 5 0
Do. do. Mild bars .. .	do.	6	0	0	6 5 0
Tin, Foreign	do.	125	17	6	126 7 6
Do. English ingots .. .	do.	129	0	0	131 0 0
Zinc, sheets, Silesian ..	do.	23	12	6	—
Do. do. Villed Montaigne	do.	23	10	0	—
Do. Spelter	do.	21	7	6	21 15 0

TIMBER.					
Soft Woods.					
Fir, Dantzic and Memel ..	per load	1	13	0	3 0 0
Pine, Quebec, Yellow .. .	do.	5	5	0	6 5 0
Do. Pitch	do.	2	11	0	2 16 0
Laths, log, Dantzic .. .	per fath.	4	10	0	5 10 0
Do. Norrkoping .. .	per bundle	0	0	7½	—
Deals, Kovda, Yellow, 4th,					
3x9 per stand, 8 10 0 ..					
Do. Mem. Yell., Unsorted,					
4x9	do.	10	5	0	—
Do. do. White, Unsorted,					
3x9	do.	8	15	0	—
Do. Norrkoping, Yellow,					
Unsorted, 4x8	do.	9	0	0	—
Do. Kemi, Yellow, 1st &					
2nd, 4x12	do.	9	0	0	12 5 0
Do. do. do. 4x11 .. .	do.	9	0	0	—
Do. do. do. 3x9 .. .	do.	9	5	0	—
Do. do. do. 3x8½ .. .	do.	7	15	0	—
Do. Kola, Yellow, 3rd,					
3x9	do.	13	0	0	—
Do. Asbacka, Yell., 3x9	do.	7	15	0	—
Do. Libau, White, Un-					
sorted, 3x9	do.	8	5	0	—
Do. do. do. 3x8 .. .	do.	7	5	0	—
Do. Hudiksvall, Yellow,					
5th, Inferior, 3x9 .. .	do.	5	10	0	—
Do. Puget Oregon Pine,					
Sound Prime, Un-					
sorted, 4x12	do.	12	10	0	—
Do. Söderhamn, Yellow,					
3rd, 3x9	do.	16	0	0	16 5 0
Do. do. do. 3x8 .. .	do.	12	0	0	—
Do. Trangsund, Yellow,					
1st and 2nd, 4x11 .. .	do.	8	10	0	—
Do. St. Petersburg, Yell.,					
2nd, 3x9	do.	11	10	0	—
Do. do. do. 3rd, 3x11	do.	7	10	0	10 5 0
Do. do. do. 3x9 .. .	do.	9	0	0	—
Do. do. White, 1st,					
3x11	do.	9	5	0	—
Do. do. do. 3rd, 3x11	do.	7	10	0	7 15 0
Do. Quebec Spruce, 2nd,					
3x8	do.	8	5	0	—
Do. do. do. Unsorted,					
3x9	do.	8	15	0	—
Do. Montreal, Yell. Pine,					
2nd, 3x11	do.	18	0	0	—
Battens, all kinds .. .	do.	6	10	0	21 15 0
Flooring Boards rin. pre-					
pared, 1st	per square	0	11	0	—
Do. 2nd	do.	0	8	0	0 10 3
Do. 3rd, &c.	do.	0	7	0	0 9 3

HARD WOODS.					
Ash, Quebec	per load	3	12	6	—
Birch, St. John, 3½ x 8 to 15	do.	8	0	0	—
Box, Turkey	per ton	15	0	0	20 0 0
Cedar, Cuba	per ft. sup.	0	0	51	—
Do. Honduras .. .	do.	0	0	41	—
Do. Tobasco	do.	0	0	3	—
Elm, Quebec	per load	4	2	6	—
Mahogany, Average Price					
for Cargo, Honduras ..	per ft. sup.	0	0	63	—
Do. African	do.	0	0	2	0 0 3½
Do. St. Domingo .. .	do.	0	0	33	—
Do. Cuba	do.	0	0	5	—
Do. Lagos	do.	0	0	5	—
Do. Benin	do.	0	0	3	0 0 4
Do. Tobasco	do.	0	0	34	—

Complete List of Contracts Open.

DATE OF DELIVERY.		WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
BUILDING:				
Jan.	21	Trealaw, Rhondda Valley, Wales—Chapel	Corporation	J. Thomas 88 Miskin Road, Trealaw.
"	21	Glasgow—Convenience	Guardians	J. Lindsay, Clerk, City Chambers Glasgow.
"	21	Kilkenny, Ireland—Alterations	Gas Department	K. Comerford, Clerk, Town Hall, Kilkenny, Ireland.
"	21	Salford—Firebricks, &c.		W. W. Woodward, Engineer, Gas Offices, Bloom Street, Salford.
"	23	Halifax—Four Houses		T. Kershaw, Architect, Lancashire and Yorkshire Bank Chambers Halifax.
"	23	Cwmbach, Wales—House	Guardians	T. James, Ashgrove, Dinas Cross
"	23	Croydon—Alterations	School Board	F. West, 23 Coombe Road, Croydon.
"	23	Merthyr Tydfil—School	Education Committee	S. Ll. Smith, 55 High Street, Merthyr Tydfil.
"	24	East Ham—Restoration of School after Fire	Corporation	R. L. Curtis, 120 London Wall, Moorgate Street, E.C.
"	25	Edinburgh—Terra-cotta, Enamelled and Glazed Bricks	Corporation	W. R. Herring, Chief Engineer, New St. Works, Edinburgh.
"	25	Cardiff—Mortuary Buildings	Corporation	W. Harpur, Borough Engineer, Council Offices, Cardiff.
"	25	Dartmouth—Abattoir	Town Council	R. M. Luke, 15 Princess Square, Plymouth.
"	25	Devonport—Entrance Lodge, &c.	Guardians	Surveyor, Municipal Offices Ker Street, Devonport.
"	25	Runcorn—Hospital	Commissioners of H.M. Works, &c.	W. & S. Owen, Architects, Cairo Street, Warrington.
"	26	London, N.—Enlargement of the Sorting Office	Widening U.D.C. Education Committee	Secretary, H.M. Office of Works, Storey's Gate, London, S.W.
"	26	Whalley Range, Withington—Temporary Schools	Corporation	E. Woodhouse, 88 Moseley Street, Manchester.
"	26	Leigh, Lancs—Destructor Buildings	London C.C.	T. Hunter, Borough Engineer, Bank Chambers, Leigh, Lancashire.
"	26	Kensington—Fire Station		Architect's Dept., Fire Brigade Branch, 3 Warwick St., Charing Cross, S.W.
"	26	London, E.C.—Alterations, &c., to Royal Mint	Commissioners of H.M. Works, &c.	Secretary, H.M. Office of Works, Storey's Gate, London, S.W.
"	26	Langho, near Blackburn, Lancashire—Epileptic Homes, &c.	Joint Asylum Committee	Giles, Gough & Trollope, 23 Craven Street, Charing Cross, W.C.
"	27	Derby—Offices	Standing Joint Committee	J. S. Storey, County Surv., County Offices, St. Mary's Gate, Derby.
"	27	Ecclesall—Stores	Industrial & Provident Soc., Ltd	J. L. Paterson, 19 St. James's Street, Sheffield.
"	27	Ramsgate—Library	Corporation	E. E. Sharpley, Town Clerk, Abiton House, Ramsgate.
"	27	London, S.W.—Lime and Cement	Chelsea Borough Council	T. Holland, Town Clerk, Town Hall, King's Road, Chelsea.
"	28	Pastow, Cornwall—Hall and Additions to Wesleyan Church	Stretford Education Authority	J. Ennor & Son, Architects, Newquay.
"	28	Goose Hill—School	T. E. Owen	F. H. Mee, 32 Victoria Street, Manchester.
"	29	Llanfarian, Wales—House	Corporation	J. L. Evans, 21 Great Dargate Street, Aberystwyth.
"	30	Halifax—Additions to West Mount Ironworks	Urban District Council	C. T. L. Horsfall & Son, Architects, Lord St. Chambers, Halifax.
Feb.	1	Sunderland—Additions, &c., to Hall	Urban District Council	J. Eltringham, 62 John Street, Sunderland.
"	1	Birr—Eight Labourers' Dwellings	London County Council	H. Browne, Town Surveyor, Town Hall, Birr.
"	1	Swindon—Wall		Society's Office, 54 Radnor Street, Swindon.
"	1	Paddington, W.—Power House and Chimney Shaft	Urban District Council	Architect's Department (General Construction Section), 15 Pall Mall East, S.W.
"	3	Chiswick—Public Baths	Borough Council	J. Barclay, Surveyor, Town Hall, Chiswick.
"	4	Bethnal Green, E.—Stabling and Disinfecting Station	Guardians	R. Voss, Junr., Town Clerk, Town Hall, Bethnal Green, E.
"	8	Kingston-upon-Thames—Alteration to Engine-room	Joint Hospital Committee	W. H. Hope, Architect, Seymour Road, Hampton Wick.
"	8	Dartford—Ward, Laundry, &c.	Rural District Council	R. Marchant, 28 Theobalds Road, London, W.C.
"	9	Holywell, Flint—Alterations, &c., to Chapel		T. G. Williams, 52 South Castle Street, Liverpool.
"	22	Runcorn—Hospital		G. E. Bolshaw, 189 Lord Street, Southampton.
"	27	Narborough, near Leicester—Asylum		Everard & Pick, Architects, Millstone Lane, Leicester.
ENGINEERING:				
Jan.	21	Newmarket—Main	Urban District Council	J. W. Metcalf, Town Hall, Newmarket.
"	22	Walthamstow—Bridge Works	Urban District Council	G. W. Holmes, Engineer, Town Hall, Walthamstow.
"	23	Dublin—Dredging	Corporation	Engineer, City Hall, Dublin.
"	25	Whitby—Cables	Urban District Council	L. H. King, Electrical Engineer, Town Hall, Whitby.
"	25	Devonport—Boiler	Corporation	A. Gard, 19 St. Aubyn Street, Devonport.
"	25	Edinburgh—Gas Propelling Machinery	Urban District Council	W. R. Herring, Chief Engineer, New Street Works, Edinburgh.
"	26	Walthamstow—Corrugated Iron Shed, &c.	London County Council	G. W. Holmes, Engineer, Town Hall, Walthamstow.
"	26	London, E.—Towing-path Wall	Rural District Council	Engineer's Department, County Hall, Spring Gardens, S.W.
"	26	Newton Abbot, Devon—Waterworks	Urban District Council	S. Segar, Engineer, Union Street, Newton Abbot.
"	28	Oldbury—Pumping Station	Corporation	J. T. Eayrs, 39 Corporation Street, Birmingham.
"	29	Hull—River Walls, &c.	Corporation	A. E. White, City Engineer, Town Hall, Hull.
"	30	Devonport—Gasworks	Corporation	Stevenson & Bursall, 38 Parliament Street, Westminster.
"	31	Palermo—Steam Flour Mill, &c.	Syndic	Commercial Intelligence Branch, Board of Trade, 50 Parliament Street, S.W.
Feb.	1	Cairo—Three Road Bridges over Nile	Ministry of Public Works	Commercial Intelligence Branch, Board of Trade, 50 Parliament Street, S.W.
"	2	Leyton—Electric Wiring and Hot-water Heating	Urban District Council	W. Jacques, 2 Fenchurch Street, E.C.
"	3	Madrid—Bridge	Hornsey U.D.C.	Commercial Intelligence Branch, B. of Trade, 50 Parliament St., S.W.
"	8	London, N.—Electric Plant	Docks Committee	R. Hammond, 64 Victoria Street, Westminster, S.W.
"	15	Bristol—Swingbridge	Docks Committee	W. W. Squire, Engr., Engineer's Office, Cumberland Rd., Bristol.
"	15	Bristol—Caisson	Docks Committee	W. W. Squire, Engr., Engineer's Office, Cumberland Rd., Bristol.
"	15	Bristol—Lock Gates		W. W. Squire, Engr., Engineer's Office, Cumberland Rd., Bristol.
Mar.	17	Christchurch, New Zealand—Electrical Tramways		Agent-General for New Zealand, Victoria Street, London.
FURNITURE:				
Jan.	25	Leeds—Furniture	Sanitary Committee	W. J. Jeeves, Town Clerk, Leeds.
"	31	Bristol—Bedsteads, &c.	Health Committee	General Medical Superintendent, 40 Prince Street, Bristol.
IRON AND STEEL:				
Jan.	21	Cardiff—Ralls, &c.	Corporation	W. Harpur, Borough Engineer, Town Hall, Cardiff.
"	22	West Bromwich—Iron Staircases	Guardians	J. W. Allen, 298 High Street, West Bromwich.
"	22	London, S.W.—Hurdles, &c.	London County Council	Parks Department, 11 Regent Street, S.W.
"	23	Harrogate—Pipes	Corporation	G. Wilkinson, Corporation Electricity Department, Harrogate
"	23	Harrogate—Ironmongery, &c.	Corporation	E. W. Dixon, 14 Albert Street, Harrogate.
"	25	Bamford, via Sheffield—Pipes	Derwent Valley Water Board	E. Sandeman, Engineer's Office, Bamford, via Sheffield.
"	27	Southampton—Staircases	Guardians	Mitchell, Son & Gutteridge, 9 Portland Street, Southampton.
PAINTING AND PLUMBING:				
Jan.	27	London, S.W.—Plumber and Painters' Work	Chelsea Borough Council	T. W. E. Higgins, Boro' Surveyor, Town Hall, King's Rd., Chelsea
Feb.	8	Manchester—Painting	Lancs & Yorks Railway Co.	Engineer's Office, Hunt's Bank, Manchester.
ROADS AND CARTAGE:				
Jan.	21	Cardiff—Road Widening	Glamorgan County Council	T. M. Franken, Clerk, County Offices, Westgate Street, Cardiff.
"	21	Stockport—Street Works	Highways & Sewers Committee	J. Atkinson, Borough Surveyor, Stockport.
"	21	Pentre Rhondda, Wales—Street Works	Urban District Council	W. J. Jones, Surveyor, Public Offices, Pentre, Rhondda.
"	21	Morrison and Pontardawe, Wales—Widening Roads	Glamorgan County Council	T. M. Franken, Clerk, County Offices, Westgate Street, Cardiff
"	22	Eastbourne, Sussex—Plants	Guardians	A. Hurst, Clerk, Guardians' Offices, Trinity Chambers, Eastbourne.
"	23	London, S.E.—Tar Paving	Penge U.D.C.	Surveyor, Town Hall, Anerley, S.E.
"	23	Willenhall, Staffs—Road Works	Urban District Council	T. E. Fellows, Surveyor, Town Hall, Willenhall.
"	23	Willenhall, Staffs—Kerbing and Channelling	Urban District Council	T. E. Fellows, Surveyor, Town Hall, Willenhall.
"	23	Hailsham, Sussex—Materials, &c.	Rural District Council	E. Catt, 17 London Road, Hailsham.
"	24	Midhurst, Sussex—Granite, &c.	Rural District Council	A. G. Gibbs, District Surveyor, Council Offices, Midhurst.
"	25	Belfast—Flagging	Harbour Commissioners	G. F. L. Giles, Harbour Engineer, Belfast.
"	25	Hatfield, Herts—Granite and Slag	County Council	U. A. Smith, County Surveyor, Hatfield.
"	26	Salford—Road Works	Corporation	Borough Engineer, Town Hall, Salford.
"	27	Erdington, near Birmingham—Making-up	Urban District Council	H. H. Humphries, Survr., Public Hall, Erdington, nr. Birmingham.
"	27	London N.—Making-up	Wood Green U.D.C.	C. J. Gunyon, Surveyor, Town Hall, Wood Green.
"	27	Sale, Cheshire—Road Materials, &c.	Urban District Council	W. Holt, Surveyor, Council Offices, Sale.
"	27	London, S.W.—Granite, Kibstones and Setts	Chelsea Borough Council	T. W. Higgins, Borough Surveyor, Town Hall, King's Rd, Chelsea.
"	29	Spilsby, Lincs—Materials	Rural District Council	T. A. Busbridge, District Surveyor, Spilsby.
"	29	Richmond, Surrey—Street Works	Town Council	J. H. Brierley, Borough Surveyor, Town Hall, Richmond.
"	30	Norwich—Granite	Norfolk County Council	T. H. B. Heslop, County Surveyor, Norwich.
"	30	Norwich—Materials	Norfolk County Council	T. H. B. Heslop, County Surveyor, Norwich.
"	30	Norwich—Critt	Corporation	A. E. Collins, City Engineer, Guildhall, Norwich.
Feb.	1	Grimsby—Road Materials, &c.	Corporation	W. G. Whyatt, Borough Surveyor, Town Hall, Grimsby.
"	2	Haslingden, Lancs—Road	Guardians	J. K. Hay, Clerk, Union Offices, Pike Law, near Rawtenstall.
"	15	Essex—Broken Granite	County Council	P. J. Sheldon, Chief Surveyor, Chemsford.

Complete List of Contracts Open — continued.

DATE OF ADVERTISING.	WORK TO BE EXECUTED	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
SANITARY:			
22	Ugborough, Devon—Sewer, &c.	Totnes R.D.C.	C. Ellis, Surveyor, Buckfastleigh.
23	Methley, Yorks—Sewerage Works	Urban District Council	G. B. Hartley, Engineer, East Parade Chambers, Leeds.
25	Worsley, Stourbridge—Sewerage Works	Kingswinford R.D.C.	W. Fiddian, Engineer, Old Bank Offices, Stourbridge.
25	Birkenhead—Removal of Nightsoil	Corporation	Chief Inspector of Nuisances, Town Hall, Hamilton Square, Birkenhead.
28	Wokingham—Sewers	Town Council	C. W. Marks, Borough Surveyor, Town Hall, Wokingham.
29	Middlesbrough—Sewer	Urban District Council	F. Baker, Borough Engineer, Middlesbrough.
30	Melksham—Sewerage and Sewage-disposal Works	Urban District Council	A. G. Smith, Clerk, Melksham.
30	Cheriton, Kent—Removal of Refuse	Urban District Council	A. Atkinson, Clerk, Public Offices, Cheriton, Kent.
37	Horsham—Sewerage Works	Urban District Council	S. Mitchell, Clerk, Market Square, Horsham.
TIMBER:			
21	Kilkenny—Timber	Guardians	K. Comerford, Clerk, Town Hall, Kilkenny.

List of Competitions Open.

DATE OF ADVERTISING.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	DEPOSIT REQUIRED FOR CONDITIONS, &c.	BY WHOM ADVERTISED.
31	Borstal, Rochester—Chancel, Organ Chamber, &c.	£50, £30, £20.	£1 is.	Borstal Vicarage, Rochester.
1	Erdington—New Council House & Free Library.. .. .	£21, £10 10s.	—	H. H. Humphries, District Engineer, Public Hall, Erdington, Birmingham.
1	Sevenoaks—Public Library	£100, £50, £20.	£1 is.	H. J. Thompson, Clerk, Council Offices, Argyle Road, Sevenoaks.
23	Bangor—Workmen's Houses	100,000, 75,000 & 50,000 kronen.	—	J. Gill, City Surveyor, Bangor.
31	Ilkley—Free Library, &c.	£100, £50, £25.	£1 is.	F. Hall, Clerk, Council Offices, Ilkley.
1	Vienna—Machinery to Lift Boats on Canal	£52 10s., £31 10s., £2,000	—	Austro-Hungarian Consulate-General, 22 Laurence Pountney Lane, E.C.
30	Newcastle-upon-Tyne—Grammar School	—	—	H. J. Criddle, 2 Collingwood Street, Newcastle-upon-Tyne.
date	Torquay—Public Library	—	—	F. S. Hex, Town Clerk, Town Hall, Torquay.
"	Haverfordwest—Meat Market	—	—	R. T. P. Williams, Town Clerk, Haverfordwest.

Tenders.

Information from accredited sources should be sent to the Editor at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of tenders cannot be accepted unless they contain the name of Architect or Surveyor for the work.

Addressed postcards on which lists of tenders may be sent will be sent post free on application to the Manager, BUILDERS' JOURNAL, 6, Great New Street, Fetter Lane, E.C.

Boston (Lincoln).—For the erection of a gas-engine for compressing air, and attendant's house, in connection with a sewerage scheme for the U.D.C. Plans prepared by Mr. James Rowell, Boston:—
No. 1 £1,079 0 0
No. 2 1,800 0 0
No. 3 1,165 0 0
No. 4 1,120 0 0
No. 5 1,247 0 0
No. 6, H. W. Parker & Son, Boston 814 10 0
* Accepted.

Harrogate.—For main drainage works, Contract 4 (Section No. 2), for the Corporation. Mr. E. W. M.C.E., engineer, 5, Prospect Crescent, Harrogate:—
A. Barbraith & Co., Newlay, near Leeds £6,083
J. Wilson & Sons, Mirfield 5,497
B. Firth & Co., York 4,736
A. Graham & Sons, Huddersfield 4,700
J. S. Dawson, Buxton 4,293
W. Brigg, Bradford 4,228
H. C. Dickenson, Starbeck 4,059
J. L. Hampton-Matthews, Scalby House, Kent Road, Harrogate 3,763
W. Morley & Sons, Keighley 3,407
Hardy & Atkinson, West Hartlepool 3,383
Parker & Sharp, York 3,369
* Accepted. † Withdrawn.

London—Thames.—For the erection of a sun and art gallery in Fairfield Road, for the Library Committee of the Corporation. Mr. Alfred Cox, architect, 4, Adam Street, Adelphi, W.C.:—

Perry & Co. £4,500
Potter Brothers 4,190
C. E. Sims 4,392
W. J. Renshaw 4,347
Strange & Son 4,259
Patman & Fotheringham 4,233
Parnell & Son 4,226
Speechley & Smith 4,190
F. G. Sharpington 4,158
P. & E. Davey 4,187
W. Brooking 4,179
Johnson & Co. 4,168
P. West 4,165
S. Kemp 4,149
Holliday & Greenwood 4,147
Smith & Sons 4,123
Wisdom Brothers 4,114
F. Gough & Co. 4,090
Leslie & Co. 4,072
S. E. Moss & Co. 4,050
B. E. Nightingale 4,019
F. Ferguson & Co. 4,000
W. H. Gaze & Sons 3,989
J. Appleby & Sons 3,974
R. Hawkey 3,950
E. Chamberlain 3,886
* Accepted.

London, S.E.—For the erection of additional nurses' quarters at the South-Eastern Ambulance Station, Newington Road, for the managers of the Metropolitan Police District. Messrs. T. W. Aldwinckle & Son, architects, 20, Denman Street, S.E. Quantities by

Messrs. W. H. Barber & Son, 22, Buckingham Street, Adelphi, W.C.:—

C. B. Roberts & Co., Tooting £2,525 10
Kirk & Randall, Woolwich 2,314 0
E. Proctor & Son, Plumstead 2,119 0
J. O. Richardson, Peckham 2,021 0
R. H. Lowe, Chislehurst 1,875 0
H. Wall & Co., Kentish Town 1,721 0
Ennes Brothers, Erith 1,693 0
W. Martin, Greenwich 1,673 0
T. Cole, Barnsbury 1,621 0
W. & C. Johnson, Ltd., Wandsworth Common 1,610 0
T. G. Sharpington, Nunhead 1,598 0
W. Lawrence & Son, Waltham Cross 1,594 0
W. Reason, 47, Rosebery Avenue E.C. 1,547 0
* Accepted.

London, N.—For alterations and additions to the Lancasterian Schools, for the Tottenham U.D.C.:—

Oak Building Co., Cambridge £17,500
J. Stewart, South Tottenham 15,468
Lole & Lightfoot, Chelsea 15,138
L. Whitehead & Co., Clapham Road 15,130
C. North, Stratford 14,985
H. C. Horswill, Forest Gate 14,946
J. Appleby & Sons, Lambeth 14,870
A. Kellett & Sons, Willesden 14,791
C. Miskin & Sons, St Albans 14,670
J. Ferguson & Co., Holborn 14,380
B. E. Nightingale, Albert Embankment 14,305
F. & E. Davey, Southend-on-Sea 14,231
A. Monk, Lower Edmonton 14,196
Hockley & Co., Grantham 14,085
Rowley Brothers, West Green 13,997
R. & E. Evans, Peckham 13,978
Leslie & Co., Kensington 13,322
A. Fairhead & Son, Enfield 13,197
A. Porter, Tottenham 13,048
H. Knight & Son, Tottenham 12,945
Pollard & Brand, South Tottenham 12,248
* Accepted. [Architect's estimate, £13,350.]

Lurgan (Ireland).—For the erection and completion of a free library building, for the U.C. Mr. H. Hobart, architect, Dromore, co. Down:—

T. Callan, Belfast £2,189 0 0
J. Graham, Dromore 2,012 4 0
H. H. Thompson, Belfast 1,938 0 0
G. Patton, Lurgan 1,985 0 0
T. W. Clughan, Larn 1,930 0 0
W. Dowling, Belfast 1,900 0 0
J. Kidd, Belfast 1,819 9 4
W. Dowers, Leatham & Trozer, Belfast 1,828 0 0
W. Callaghan, Marolin, co. Down 1,770 0 0
* Accepted.

Peterborough.—For the extension of the Post-Office, for H.M. Office of Works &c.:—

G. Brown £9,250 0 0 .. £194 18 0
F. Nichols 8,111 0 0 .. 185 0 0
Ansell & Ansell 7,970 0 0 .. 200 0 0
T. Furnis 7,873 0 0 .. 190 0 0
Hockley & Co. 7,059 0 0 .. 100 0 0
J. Thompson & Co. 6,982 0 0 .. 240 0 0
J. L. Bridgefoot & Son 6,793 0 0 .. 550 0 0
J. G. Cowell 6,695 0 0 .. 220 0 0
Hackley Brothers 6,682 0 0 .. 226 10 0
E. W. Beech 6,307 0 0 .. 25 0 0
D. Gray 6,294 7 9 .. 315 18 9
J. Cracknell 6,198 0 0 .. 377 0 0
H. Watson 6,125 0 0 .. 200 0 0
E. V. Brown & Son 5,835 0 0 .. 97 0 0
A.—Credit old materials.

Southborough (Kent).—For the erection of five shops, extended from fronts of and repairs to cottages

Nos. 125 to 133, London Road, for Mr. Philip H. Diplock, Brighton, Sussex. Mr. Blunden Shadbolt, architect, Brighton Road, Horley, Surrey:—

W. Gowan, A. B. C.
Croydon .. £610 0 0 £255 0 0 £380 0 0
J. Smith, Tunbridge Wells 520 3 6 208 14 0 286 19 0
A. Pateman,
Horley .. 500 0 0 —
E. Mitchell,
Horley .. 477 0 0 240 0 0 315 0 0
A—Tender for five shops and repairs to cottages.
B—Tender for two shops and repairs to cottages.
C—Tender for three shops only.

Whitchurch (Shropshire).—For the erection of the Alexandra Temperance Hotel. Mr. Walter Webb, architect, Whitchurch:—

T. Pace £2,874
J. T. Jones 2,857
G. Bullock 2,677
S. Manley 2,625
T. G. Huxley 2,600
J. Corfield 2,521
R. Powell 2,397
G. Edge 2,197
G. Dodd & Son, Whitchurch 2,193
* Accepted.

Wokingham (Berks).—For the erection of a county police station and petty sessional court, for the Standing Joint Committee. Mr. Joseph Morris, county surveyor, Reading. Quantities supplied:—

E. F. Lewis & Son £6,572
G. Higgs, Reading 6,550
F. R. Chinchin & Co., Bagshot 6,350
Spear & King, Crowthorne 6,345
Veale & Son, London 6,334
H. Searle, Reading 6,325
C. Capel & Sons, Reading 6,315
S. Ellis, Guildford 6,278
G. H. Tucker, Reading 6,250
Jenkins & Sons, Ltd., Southampton 6,245
Peerless Dennis & Co., Eastbourne 6,230
East & Hyde, Binfield 6,165
G. Pilgrim, Reading 6,104
G. S. Lewis & Brother, Reading 6,100
G. Kemp, Aldershot 6,169
E. Chamberlain, Addlestone 6,040
W. Culver & Sons 5,992
W. J. May, Bracknell 5,985
B. E. Nightingale, London 5,930
J. Ferguson & Co., London 5,963
F. Pizey, Sunninghill 5,907
H. W. Godwin, Reading 5,795
McC. E. Fitt, Reading 5,787
Boxall & Sons, Pangbourne 5,714
J. B. Seward 5,708
J. Dallow & Sons, Birmingham 5,598
J. H. Margetts & Son, Reading 5,594
W. Hawkins, Reading 5,586
E. O. Hughes 5,564
G. Browne, Bracknell 5,551
C. W. Cox & Sons, Maidenhead 5,505
H. Charman, Ascot 5,500
W. Watson, Ascot 5,496
[County surveyor's estimate, £5,654.]
* Accepted. [Rest of Wokingham.]

Wrexham.—For the erection of new showroom, stores and new fittings to offices of the Wrexham Gaslight Company, Salop Road. Mr. M. J. Gummow, architect Wrexham. Quantities by the architect:—

W. E. Samuels £1,090
Lewis Brothers 1,066
Davies Brothers 1,036
* Accepted. [All of Wrexham.]

Note.—Two estimates came in too late.

Advertising Notes.

He who hesitates, retrogrades.

Appointments Wanted.

The charge for Advertisements under this heading is 1s. 6d. per insertion not exceeding four lines, and 6d. per line afterward, prepaid. Three insertions may be had for the price of two. Advertisements must reach the Office not later than 5 o'clock on Monday.

ADVERTISER: 45, F.R.I.B.A., late Executive Engineer, Public Works. Home and Colonial experience. Accept nominal salary to resume home work.—A., 21, Nemours Road, Acton.

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ARCHITECT and SURVEYOR'S Assistant desires engagement. Associate of Sanitary Inst. (by examination). Nine years' varied experience; measuring up, contract drawings, details, specifications, quantities, surveying and levelling.—H., 10, Rollscourt Avenue, Herne Hill, S.E.

ARCHITECT & SURVEYOR'S Assistant desires Engagement, 9 years' experience in general and detail drawings, specifications, quantities, surveying, &c. Excellent testimonials.—Write, ASSISTANT, Geeston House, Ketton, Stamford.

ARCHITECT'S and SURVEYOR'S JUNIOR ASSISTANT desires Engagement, 4½ years' experience. Working drawings, details, surveying, &c.—G., 33, Bickerton Road, Highbate, N.

ARCHITECT'S AND SURVEYOR'S JUNIOR ASSISTANT desires engagement. Good experience of first-class work, church and domestic. Details, measuring up and surveying.—Box 140, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

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GENERAL FOREMAN disengaged, excellent testimonials from Architects and also from Builder retired. Town or country.—Apply Mr. H. JENNINGS, 70, Lascotts Road, Wood Green, N.

GENERAL FOREMAN Disengaged wants job. Carpenter. Aged 46. Good references. Town or country.—H. W., 57, Chiswick Road, Lower Edmonton, N.

GENERAL FOREMAN seeks RE-ENGAGEMENT, town or country. Thoroughly practical in all branches. Age 45. Carpenter and joiner. Good references. Energetic and reliable.—A. B., 61, Albert Road, Peckham, S.E.

GOOD MASON wants Job; piecework or day; fixing or banker; good references.—H. E., 8, Alpha Road, New Cross, S.E.

HOUSE DECORATING and REPAIRS. Surveyors' Dilapidation Work estimated for; very moderate charges.—12, Choumert Grove, Peckham.

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MACHINIST, JOINER, to take charge, or work spindle and tenoning. 22 years' experience. Country not objected to. Good refs.—H. K., 34, Cumberland Road, Walthamstow.

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MACHINIST wants job, to work circular saw, overhand, and thicknessing machines. Joinery, cabinet, or general work. Good refs.—J. B., 1, Berkeley Terrace, Norwood Road, Southall, Middlesex.

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PLUMBER (practical), well up in branches, willing to fill up time, seeks CONSTANCY in country or seaside. Married; total abstainer.—PLUMBER, 20, Marshalsea Road, Borough, S.E.

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YOUNG MAN (28, married), wants Situation on good Country Estate, as Grainer, Gilde Decorator, &c. Steady and reliable. Good references. S., 44, Beaconsfield Road, Croydon.

Appointments Vacant.

The charge for Advertisements under this heading is 1s. 6d. per insertion not exceeding four lines, and 6d. per line afterward, prepaid. Three insertions may be had for the price of two. Advertisements must reach the Office not later than 5 o'clock on Monday.

A COMPETENT QUANTITY SURVEYOR required at once for Architects' Office in the Provinces, probable permanency. Apply stating age, experience, and other qualifications, and salary required to Box 145, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

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CLERK wanted at a large Works in Lancashire, for Wages and Correspondence. Must be reliable and quick at figures; shorthand and typewriting a necessity. State age and experience, also wages required.—Address, Box 2702, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

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PLANS, SPECIFICATIONS, AND QUANTITIES prepared on reasonable terms. Architects assisted. Builder's quantities taken off promptly.—"Alpha," Box 2701, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

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5 O'CLOCK P.M. MONDAY IS THE LATEST TIME FOR RECEIVING "WANT" ADVERTISEMENTS.
OFFICE: 6, GREAT NEW STREET, FETTER LANE. E.C.

THE
BUILDERS' JOURNAL
AND ARCHITECTURAL RECORD.

January 27, 1904. Vol. 19 No. 468

6, Great New Street, Fetter Lane, E.C.

Summary.

Mr. Rider Haggard has been visiting the site of the First Garden City near Hitchin, and speaks hopefully of it. (Page 46.)

The new buildings for Hunslet Workhouse and Infirmary, Leeds, have cost £70,000 for a present accommodation of 500, or £140 per bed: when completed a total provision will be made for 750 inmates, at an estimated cost of £120 per bed. (Page 43.)

In a paper on "The Making of Architects" which he read before the Architectural Association on Friday evening, Mr. Maurice B. Adams said that architectural laws ought to be taught in our training schools just as English and spelling are taught, and there was no reason why building construction, treated specially from an architect's standpoint, should not be scientifically taught and practically demonstrated in properly-appointed workshops all over the country. Whatever disadvantages the English pupil had experienced as compared with his Continental contemporaries, he had escaped the stereotyped mannerisms and academic formalisms so conspicuous in much of the otherwise accomplished modern architecture abroad, though we were bound to recognize the traditional methods of the French. (Page 38)

The new council-chamber at the City Chambers, Edinburgh, measuring 65ft. by 37ft., is the most notable addition in the new scheme of enlargement. It has been carried out from designs by Mr. Morham, the city architect. (Page 47.)

Referring to the Usher Hall and the placing of this work in Mr. Morham's hands, Mr. A. Hunter Crawford, president of the Edinburgh Architectural Association, said last week that it was a thing they ought to put a stop to if possible. (Page 42.)

The Soane Medallion designs, as a whole, are poor, though Mr. Horth's (the winning design) is well treated inside and Mr. David Smith's (awarded a certificate of hon. mention) shows a very fine elevation. The Tite designs are mostly good, and include several excellent drawings. The Grissell drawings are also above the average. (Page 45.)

The Bridge House Estates Committee is against the proposal to remove the obelisk in St. George's Circus, on the south of the Thames. (Page 46.)

A fresh appeal is to be issued for the completion of the restoration of Peterborough Cathedral, which was begun in 1883 and has already cost more than £100,000. Repairs to the north and south transepts are still needed, and will cost £1,500. (Page 46.)

At the annual meeting of the Bristol Master-Builders' Association it was reported that the "hardy annual" the Plumbers' Registration Bill had been opposed as being useless and unnecessary. (Page 48.)

British Sculpture. OPINIONS may differ very materially in regard to most phases of art, but we can be sure everyone will acknowledge the living force embodied in British sculpture to-day. Mr. Spielmann's lecture at the London Institution last week serves to recall the fact to our memory. Since 1875 a great change has come over our sculpture, and we owe the awakening to two Frenchmen, Dalou and Lanteri, and two Englishmen who studied abroad, Alfred Gilbert and Onslow Ford. As Mr. Spielmann observed, it is difficult to realize how bad our sculpture was sixty or seventy years ago. Men of taste rebelled against Nelson being "mast-headed" on the top of a prodigious column in Trafalgar Square, out of recognition and almost out of sight; and they laughed at what was considered an appropriate homage to the then Duke of York—elevating him to the top of another great pillar, with a lightning conductor through his brain, which it was declared would be very useful on which to file his unpaid bills. Until Alfred Stevens, no one in this kingdom thought of instilling real life and blood into the clay and marble, and not life only, but dignity and nobility of form and movement previously unknown in British work. Yet even Stevens was powerless to influence very much the prevailing passion among our artists for wrestling with sculpture in the Græco-Roman manner. The influence of Boehm contributed somewhat to thaw the chill, and Foley in his later years, in his epoch-making "General Outram," reminded the public that monuments need not be staid to dullness. Mr. Armstead, working in the spirit of the younger school, produced sculptural schemes of unprecedented magnitude. After that we come on a host of names which do great honour to our sculpture—Brook, Thornycroft, Leighton, Swan, Bates, Drury—with Alfred Gilbert at the head of them; and finally we think of Watts, in his eighty-seventh year, working upon one of the greatest masterpieces of his life. Truly sculpture is a living art among us.

"The Boy" in Panier Alley. At the recent conversazione of the London and Middlesex Archæological Society Mr. Charles Welch, in a paper on "City Archæology," alluded to "The Boy" in Panier Alley. The house on which this well-known sign was fixed has recently been pulled down, and it is not surprising to learn that enquiries were numerous as to when "The Boy" would be removed to the Guildhall, where so many relics of the London of years ago are to be found. Mr. Welch very properly urged that it should be restored in the new building to a position as near as possible to that which it occupied

in the old. Whether or not this will be done we do not know; but we see no reason why it should not. There are many old signs, property marks, existing in London which are in danger of being carried away as rubbish when the houses on which they are fixed are demolished.

The Resources of Ireland. WE make it a special point, whenever occasion arises, to draw attention to the marble, granite and stone resources of Ireland, because we believe a great deal of benefit will result from the development of these resources, both to those who work the quarries and to builders who purchase the material. It is only within the last few years that official endeavours have been made to exploit the quantity of stone which lies untouched in Ireland, and it came doubtless as a surprise to many when the Department of Technical Education exhibited so many and such excellent specimens at the Imperial Institute about two years ago. The Department continues in its task, and we assume that it was not unconnected with the lecture on Irish building stones which Mr. Lyburne, F.G.S., delivered in the Dublin Museum last week. The lecturer pointed out that Ireland is very rich in supplies of variegated marbles. True there is no white marble like Carrara to be found, but there are good supplies of red, grey and green of better quality than the much-talked-of Belgian sorts. Mr. Lyburne showed specimens of marble from the Ballinacurra quarries, near Middleton, supplies of which were ordered by the Prince of Wales for the decoration of Marlborough House, and Connemara marble, a quantity of which the King recently ordered for use in Windsor Castle. Dealing next with limestones, Mr. Lyburne mentioned that on a rough calculation half the area of Ireland was covered with limestone, either of the coarse or fine crystalline variety. There were quarries near Dublin and Skerries capable of producing excellent material. Slates, too, were available, and it was claimed that these were as good as any that could be got elsewhere. Material is undoubtedly abundant in Ireland; it only awaits development. What is most needed in Irish quarries is the utilization of the wire-saw system, by which, in working the marbles especially, huge slabs of the material can be cut out without injuring the general formation. There can be no doubt that a great deal of marble and other material is imported from foreign countries while gigantic resources by our own shores are allowed to remain unused.

DRAWINGS OF ARCHITECTURE.

THE drawings added to our series this week are among the most interesting which we have reproduced. They are the work of an artist and an architect respectively, and one is able to trace in each just that difference in treatment which might be expected. Yet we must not think of Sir Edward Poynter only as a painter, and the president of the Royal Academy, for he received an architectural training from his father, who was himself an architect of some distinction; moreover, as a young man he was associated with Burges, for whom he painted the roof of Waltham Abbey, while we need only recall the mosaic figures of Phidias and Apelles and the decoration of the refreshment-room at South Kensington, the "St. George" in the House of Commons lobby, the decoration done at Wortley Hall for Lord Wharncliffe and the designs for mosaics in the dome of St. Paul's—in order to remind our readers that Sir Edward Poynter has had a close connection with architecture throughout his distinguished career.

Still, there is a distinct difference between the drawings reproduced on these pages. Mr. Prentice made a very exact study of Spanish Renaissance architecture, and his drawings show that precise knowledge which

an architect would possess. The drawing below, for example, is wonderfully exact in all the constructional details; yet one can see at a glance that it has been done boldly and swiftly—everything is strong, clear, unhesitating, and the wash is put on with that command over the brush which Mr. Prentice exhibits with his pen and pencil. The drawing is rather an architect's record than a picture, but the pictorial element is nevertheless there, as also in the drawing of Santiago on p. 40 of this issue. Both are very fine examples of architectural draughtsmanship, and we are very glad to be able to include them in our series.

Turning to Sir Edward Poynter's drawing on the opposite page, of an old archway in Capri, we at once notice how the artist has rendered his subject. This drawing is a beautiful example of pencil work, and the lines of its composition—the high recess in the wall over the arch and the returning walls—delight the eye: while the softness in the light and shade are equally charming. Of the other drawings by Sir Edward Poynter reproduced this week we need say no more in detail: suffice to express our admiration for them and to hope that our readers will appreciate them as much as we do ourselves.

We continue to acquire a number of fresh drawings for our series. Among the latest are some by Mr. H. Wilson, Mr. Oliver Hall and Mr. F. L. Emanuel.

ARCHITECTURAL ASSOCIATION.

On the Making of Architects.

A MEETING of the Architectural Association was held on Friday evening at 9, Conduit Street, W., the chair being occupied by Mr. Louis Ambler.

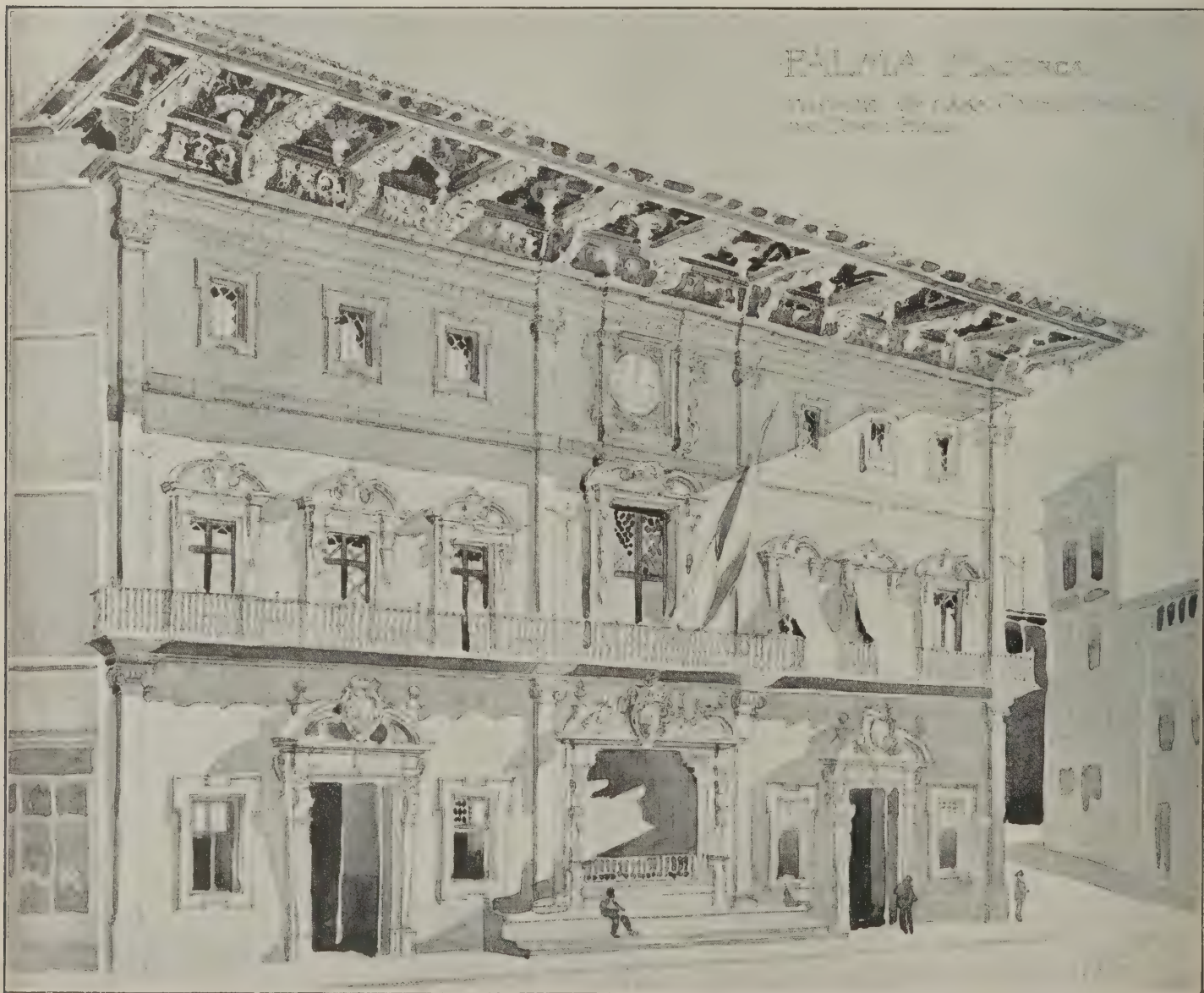
The following additions to the New Premises Fund were announced:—Mr. S. B. Beale, £3 3s.; Mr. W. L. Spiers, Mr. Hampden W. Pratt, Mr. J. C. Stockdale, £2 2s. each; Mr. J. Soutter, Mr. J. Sulman, £1 rs. each.

A vote of condolence with the relatives of the late Mr. H. Saxon Snell was passed.

Mr. G. Sherrin, jr., and Mr. J. C. Moor were elected members of the Association, and Messrs. C. J. Tait, G. L. Crickmay, E. M. Joseph and H. A. Douglass (old members) were reinstated.

A paper was then read by Mr. Maurice B. Adams, F.R.I.B.A., on "The Making of Architects, with Examples of Draughtsmanship," of which the following is a summary:—

For architects beyond all question the survival of the fittest alone remains a certainty; consequently a more excellent status is inevitable. Thanks to the enterprise of a few, an advance towards proficiency has already been made, and some steps have been taken to improve the methods in vogue for the making of architects.



DRAWINGS OF ARCHITECTURE: A. N. PRENTICE.

The disinterested and capable work carried on by the Architectural Association during so many patient years furnished the basis of operation, and induced many to desire something higher and more complete. It thus came about that the educational scheme has lately expanded with the notable result that the Architect's Day School has entered upon its initial stage, and thus far may be accepted as an accomplished enterprise demanding our hearty and united support. The success attending this decided departure suggested to me the idea of promptly assisting its development by bringing about the free gift of the collection and buildings of the Royal Architectural Museum, so as to solve without further delay the long-experienced difficulty as to the acquisition of more suitable accommodation in which to conduct this great work. As so many are still under the impression that the Museum was in financial difficulties, let me again say that this was not so, because the annual income which for years past we administered at Tufton Street amounted to between £1,500 and £2,000, and the Museum had no monetary liabilities whatever.

We stand, however, only on the threshold of the movement, which has now entered upon another phase owing to the recently formulated design of the Royal Institute of British Architects for establishing teaching centres for architects in various big towns all over the Kingdom, under the advisory control of an Educational Committee at Conduit Street composed of some of the foremost architects and educationists of the day. The necessity of a more systematic plan of educating students in architecture is being more clearly recognized and more generally accepted. I am persuaded that nothing is better calculated to break down the barrier of union between those within and those without the pale of the Institute than this fundamental question on which all the best architects are united.

Before we can hope to educate the public we must ourselves show a better way and endeavour to overcome the complacency with which the public accepts the ugly in preference to the beautiful in all things belonging to building.

In establishing a more systematic schooling in architecture we are taking the only reliable road to reform in such matters.

Architectural Teaching in Schools.

Architectural laws can and ought to be taught in our training schools just as plainly as English and spelling and grammar are taught, and there is no reason why building construction, treated specially from an architect's standpoint, should not be scientifically taught and practically demonstrated in properly-appointed workshops all over the country. The whole movement must be directed and considered as a unified explanation of building requirements in their bearing upon the actual practice of architecture, dealing with its problems in the round rather than in the flat or on paper, and we ought also to form, with this object, a well-selected series of exhibitions of the most recent modern building appliances, making the choice of improved contrivances and of all kinds of materials quite apart from any advertising considerations.

It would be a mistake to only establish a Metropolitan Bureau of Architectural Education, and the policy adopted should therefore be on broad and comprehensive lines. In common with all cosmopolitan undertakings, the working administration must possess a centre of organization in London. The opportunities to be thus afforded would accomplish more to raise the status of the profession throughout the country than any scheme of registration by Act of Parliament could possibly do. Let no one suppose, however, that anything approaching a sort of professional forcing-house or system of



DRAWINGS OF ARCHITECTURE: SIR EDWARD J. POYNTER, P.R.A.

cram is in process of contemplation where artistic capacities will be impaired by abstract theories and technical prolixities. It is to be an "occupation" school conceived and conducted by architects for architects; therefore the artistic and inventive powers of no one are likely to be reduced to the level of mechanical plodders by any inflexible type of regulation teaching in dealing with matters of design.

Methods Abroad and Our Own.

Whatever disadvantages the English pupil has experienced as compared with his Continental contemporaries, I think we are justified in congratulating ourselves that anyhow he has escaped the stereotyped mannerisms and academic formalisms so conspicuous in much of the otherwise accomplished modern architecture abroad, though we are bound to recognize the traditional methods distinguishing the best modern buildings of the French. The over-accentuation of individuality so detrimental to the uniformity of effect in our English towns is chiefly due to the absence of comprehensive schemes compatible with the dignity of architectural treatment. The uncompromising insistence of personal rights by different owners of circumscribed sites precludes anything approaching the grand scale of setting out the façades of our thoroughfares on the lines adopted in France and Germany. The fiasco of the L.C.C.

Strand-façade improvement scheme is a case in point. Moreover, the position insured to architects in reference to the Governmental Departments of Public Works abroad has no counterpart in this country.

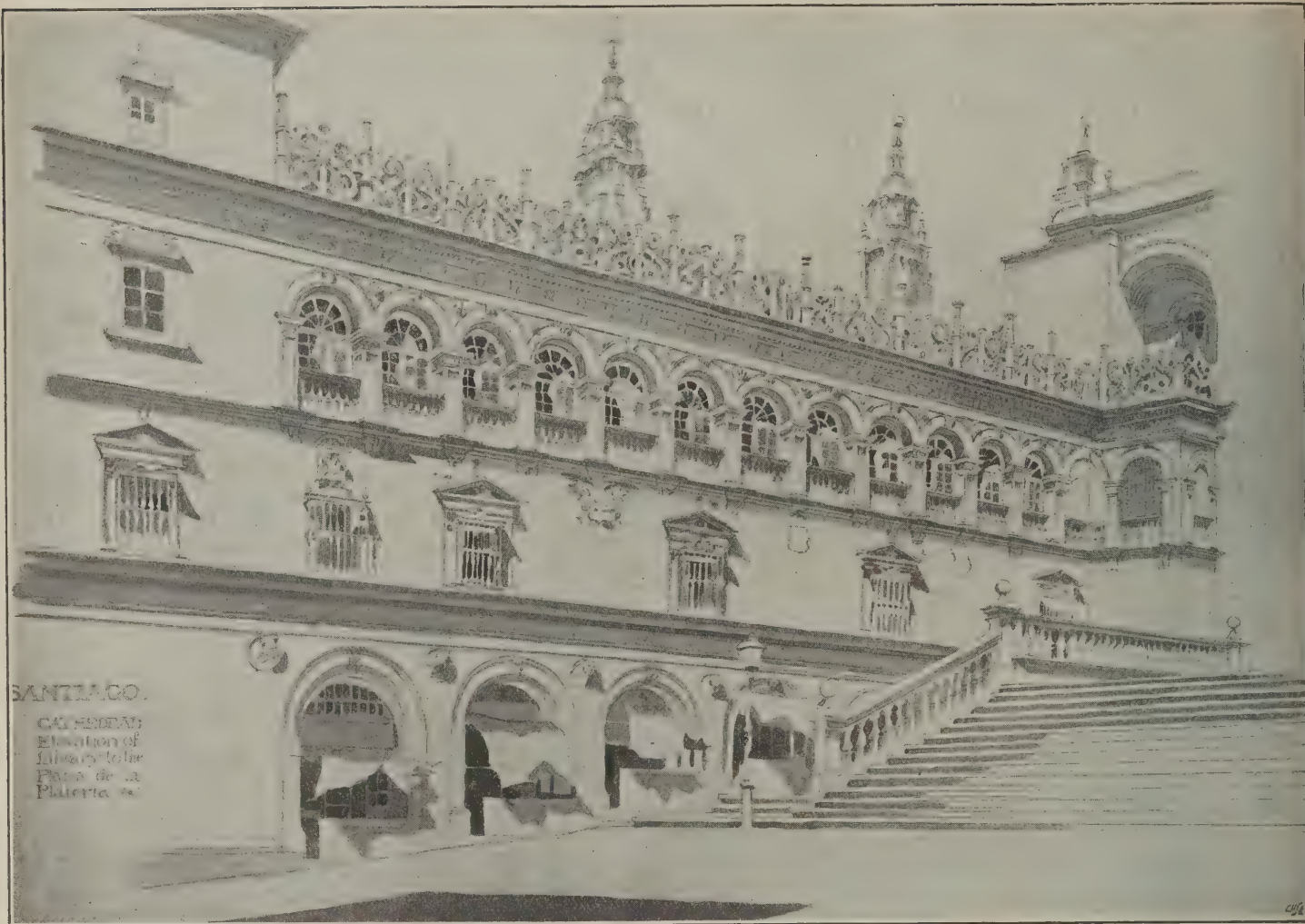
While recognizing this difference, we do at least obtain

A Picturesque Personality

in our work which, however, is gradually becoming more subservient to recognized methods of design; and it is a gain also that the British student does not waste time in emulating the foreign system of draughtsmanship, which starts with the thinnest of lines and finishes with shading and sponging and sponging and shading till the utmost finish is obtained and all individuality is gone. Our drawings are too often mean and poor, and our pupilage experiences are frequently a disgrace, but I am convinced that for practical efficiency, as also for the retention of what semblance of artistic tradition remains at all in England, no satisfactory substitute for apprenticeship under really qualified and conscientious masters is at all probable, and therefore we shall do well to supplement and improve this old plan, instead of attempting to supersede it by importing German ideals *en bloc*.

The General Consensus of Opinion

as to the experience resulting from the German and other foreign colleges' course



DRAWINGS OF ARCHITECTURE: A. N. PRENTICE.

of four and more years of class training amounts to this, that when young architects so taught commence to practise they display, as you might naturally expect, a conspicuous want of practical knowledge, and fail from lack of an acquaintance with the application of much that they have theoretically acquired, so that the older architects abroad recommend at least a year's apprenticeship after leaving the schools, and for those who cannot thus afford another twelvemonth in learning their business and can do without holidays it is advised that they shall do office work during their vacations.

A year's probationary work in such a school as we are intending will afford the student an opportunity prior to his articles for ascertaining whether the calling of an architect is likely to prove congenial to his particular capabilities or not. If by this process of elimination some failures could be prevented so much the better for art and for the individuals themselves.

Whether it is ever probable, even if it were desirable, that the Government will establish a National School for Architects in this country is another question beyond the range of practical politics at present. Our obligations, however, in the meantime are definite and clear, it being evident that architects must combine in some well-concerted scheme to bring the study of building art and its allied technical crafts into conformity with the higher educational developments of our time, which have made such overwhelming advances during the past few years in France, Germany and America.

Whatever may have been the position of the architect in the Middle Ages, and whatever his methods then were, he can no longer depend upon the workmen as if they had

been brought up on traditional lines, for the last remnant of the vernacular in architecture went the way of Queen Anne nearly two hundred years ago.

Architect and Craftsman.

The architect can nowadays only calculate on the co-operation of artisans subordinated by labour emancipation, and if satisfactory buildings are to be produced the architect must rely upon himself. Some theoretical reformers decry such a position for the modern architect, to whom they would accord a much less important post, permitting him only to confine his attention to the shell or carcase of a building, leaving its enrichment and elaboration in an architectural sense to trained specialists from arts and crafts schools managed by professors, the notion being, as would appear, that architecture can be produced in a co-operative system of supply, here a little and there a little as if it were an applied art. In advocating this fallacy its authors overlook the risk of incongruity which must ensue, no matter how excellent individually various parts of the work might be. The controlment of the architect as the master-builder is essential to the unity and harmonious combination of the whole undertaking.

I confess but little sympathy with those clever folk who advise students to become skilled artificers in some one or more of the decorative crafts, telling them that, by becoming ornamentalists in plasterwork or adepts in smithery, they will become better master-builders. On the other hand, every man up to a certain point can but be the gainer by some practical experience in carpentry and joinery.

We are thus brought face to face with the initial conditions, which allow but little

choice in this matter; consequently in the making of architects one of the essentials peculiar to the calling must consist in a thorough initiation of the student in

Business Management.

based upon an intimate acquaintance with the technical details of contracts and their legal consequences, as well as building Acts and by-laws. It is no longer sufficient to relegate such matters to the attention of building surveyors as if they were of no concern to the architect.

As architects we have more and more to attend to a considerable amount of purely business routine, and are expected to deal with highly technical problems not infrequently. We cannot afford to limit our vision from one point only, but have to look at our work all round. Builders are becoming gradually less and less trained operatives themselves, and they are largely assuming the position of financiers, conducting their business with a staff of departmental managers, who in any event are expected to show a profit in all trades.

Paper Design.

We are told that artistic fruition exists beyond the scope of a drawn design, which at most is a mere paper pattern suitable for transmission through the penny post, and, further, that the realization of a building depends upon the millions of handstrokes of the artificer's work which consummates and brings the creation into shape. This sarcasm, so tersely expressed, might be partially true if we chanced to be employed in constructing Egyptian pyramids, but unless we wish to emulate the chaos generally associated with the prehistoric building of the Tower of Babel we shall scarcely be induced to rely in these days solely upon the handstrokes of

the British working man. Whatever theories we may indulge in as flights of fancy during holiday hours, for real work the student must take care that his own handstrokes shall be unmistakably based upon practical knowledge, particularly in making his working details, ensuring their accuracy and workmanlike thoroughness, in which every part of his proposed building is clearly worked out after the design as a whole has been drawn and thought over to a smaller scale. Such diagrams may be quite unattractive as drawings, and perhaps fragmentary looking; in some cases they will be left unfinished in pencil or chalk, and generally it will suffice to leave them uncoloured and not inked in.

Whatever may have been the practice before vernacular modes of building died out, there is only one way now of securing good building and artistic work, whether it is carried out under a schedule or contract, and that is by making working drawings such as I have described.

The collection of office drawings on the walls of this room are the best illustration which can be given of what I am advocating, and if this exhibition brings home the lesson thus insisted on the object of our meeting will have been secured.

Modern Draughtsmanship.

Never before has skill in draughtsmanship of the right sort been more capable than it is at the present moment, and if drawing alone could ensure good building the architecture of the twentieth century should be of surpassing merit. Drawings necessarily only furnish the architect with his chief and indispensable "instruments of service," and unless he has intuitive taste and inventive capacity the pen or pencil, however facile the hand may be, will not alone furnish him with ideas or give him what is called "the power of design." The best architects take good care to have their designs well drawn, but I suppose no one realizes the shortcomings of drawing more entirely than a good architect. After all, it is the building itself by which he must be judged. Few things are more deceptive than shadow-projected and worked-up elevations, unless it be show-perspective drawings, and particularly the accommodating pictures of the perspective expert.

Working Drawings.

In our consideration of working details the student must remember their eminently conventional character, and as such they fail to give the effect of the materials intended to be employed, while the arbitrary tintings, used to show the workpeople and measurers how the several materials come together, convey no guide to the determination of more than the most elementary and incomplete ideas of the architectural result as a work of beauty. The very lines which go to make up the drawing tend to mislead any but an experienced judgment. Thin lines make a design appear weak, and heavy lines give an undue importance to minor points, and by over-accentuating the jointing a fictitious effect is imparted. Burges once said in this room, "We cover our drawings with such quantities of lines that we finish by deceiving ourselves as well as our clients." It is dangerous and unwise to depend upon our drawings unless we possess an intimate acquaintance with materials, and because so many have not cultivated this knowledge as they might well have done the failure of much of our modern work may readily be accounted for. The importance of texture is thus overlooked quite as much as a proper appreciation of scale and colour. Also, the value of surface finish befitting various materials does not receive the study which ultimate good effect demands. It is desirable to think in the round and design in perspective with what has been called a modelling mind. Drawing in some degree may help

us in this, but it cannot enable us to judge as to the weathering properties of materials or their liability to accumulate dirt, and no artistic architect will reckon such considerations as of small concern.

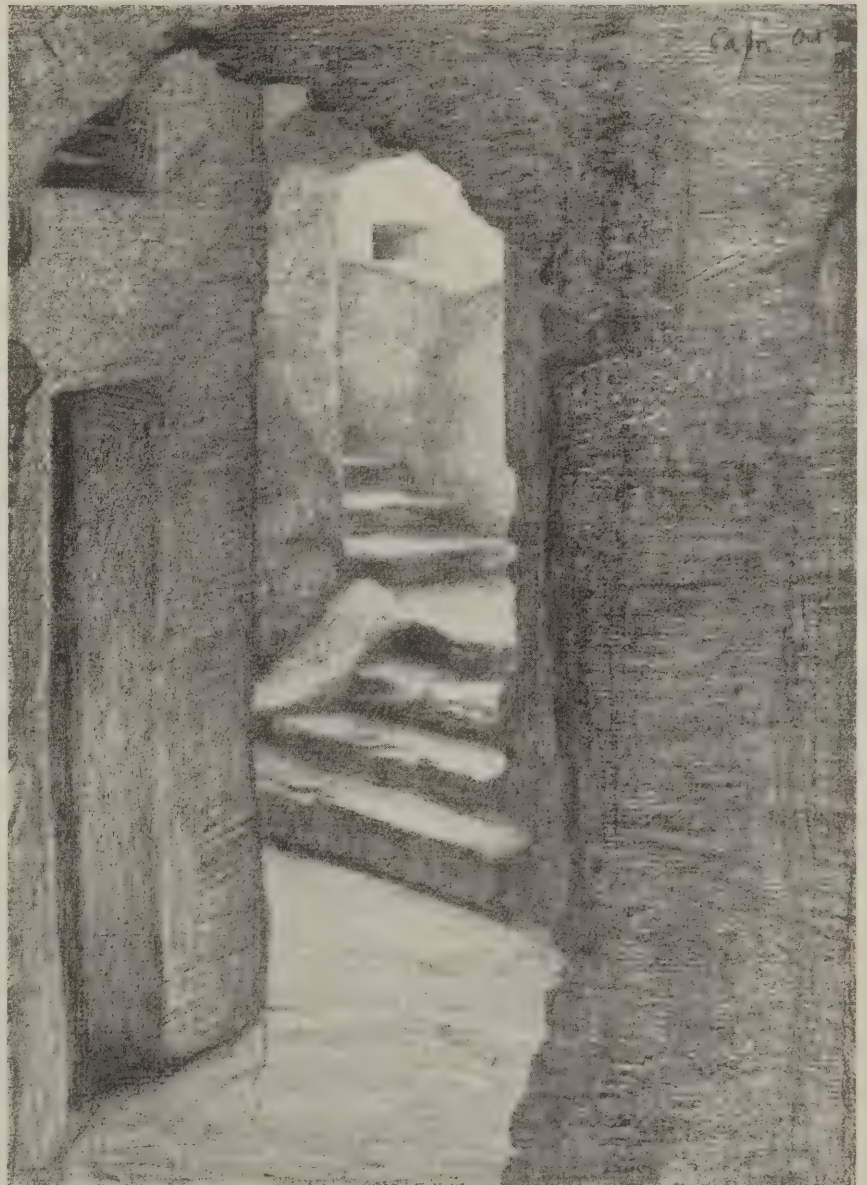
There were, of course, no splendid draughtsmen in the thirteenth century, when draughtsmanship was very fragmentary and indifferent; and, for that matter, we also must admit that in all probability a vast number of beautiful buildings all over the land were put up without any architects at all in the now understood annotation of the term, "when the roughest draughts possible were made out for these buildings, and they grew up simply without an intermediary between the mind and the hands of the people who actually built them."

Things have changed, but it is pure affectation to run down good drawing which does not constitute paper architecture, neither is it at all probable that a man who is workmanlike enough to draw well will be content to build badly. Work has now to be carried out under a totally different set of circumstances. The arbitrary and so-called economic divisions of trades, the principle of contracting and sub-contracting, the consequent prevailing deterioration of interest in the work itself for its own sake, and the degenerated minimum yield of labour in return for the maximum amount of pay

procurable, present the mercenary and rotten ideal which unfortunately dominates the current labour market of what is called skilled handicraft.

The Factories.

When craftsmanship flourished "dumping" was unheard of, and labour questions had not been exploited by big capitalists on the one hand and by paid agitators on the other. Workmanship, in consequence of big factories and huge combines, has become divided and sub-divided in rigorous subordination so completely that the worker instead of knowing his work from start to finish now takes his place only as part of a gigantic machine, plodding on with brainless indifference at a set of unvarying details turned out by the hour or by the piece. Prices are settled at a fixed and uniform consideration in cash according to amalgamation rules formulated, irrespective of good workmanship, as such, by vicarious directorates, who assume a convenient ignorance when employees are underpaid or the employers cheated, finding an excuse by reference to the sum of dividends obtainable. Trade-unionism became a necessity, but, by doing nothing or next to nothing to ensure a tradesman being a skilled workman at his trade, barren badness now passes muster where honest impartiality ought to exclude such rank incapacity: a state of things much to be regretted.



DRAWINGS OF ARCHITECTURE: SIR EDWARD J. POYNTER, P.R.A.

"Efficiency"

leads to the narrow path for the few destined to tread the *pleasance* of Fame, peopled only by those who really did their best.

Towards the close of last year all Italy was celebrating the centenary of the great Italian poet Alfieri, who rejuvenated the literature of that country through his tremendous influence on the life of his people. His abilities were seconded by a determination to be satisfied with nothing short of his very best, and thus it was he rose to fame. His first play gave him so little satisfaction that he rewrote it three times throughout before it was ready for the stage.

When Mr. E. A. Abbey painted his famous picture of the Trial of Queen Katherine, it took him many months of hard work, and when the painting was finished people praised it as a masterpiece. The painter himself was not so satisfied, because to his critical eye the red of the Cardinal's robes looked a shade wrong. No one else suggested this lack of harmony in the colouring, but although the picture was completed Mr. Abbey thought it could be improved, so he set to work with his wife and servants to scrape away all the offending red from the canvas, a process which occupied six hours. The artist then re-painted the costume of the Cardinal and so finished his picture, furnishing us with another notable instance of unqualified resolve to secure the very best.

This resolve to do one's best is not incompatible with the natural distaste for the competitions and contentions of life which so many really artistic men feel. The impulse of ambition holds with such a secondary place, and it is not always the strongest man that is the most ardent climber. To not a few the tranquil valleys possess a greater charm than the lofty pinnacles of affairs.

Pugin, Street, Burges and Pearson.

Pugin influenced a generation and thanked God he had been permitted to see and study the eastern transepts of Beverley Minster. Who does not remember the inspiring force of George Edmund Street, and who of all of us acquainted with the charm of J. D. Sedding's personality can ever cease to be thankful for his Heaven-sent enthusiastic fire? No ghost was secreted in his office; he did his work himself and rejoiced in the doing of it, consequently his buildings are full of interest and always repay a visit.

Few architects can draw the figure as William Burges could. Go to Studley Royal and you will not fail to be impressed by his ornate French-Gothic church, built there for the Marquis of Ripon, standing at the top of the noble avenue and terminating its vista. Notwithstanding its suggestion of exotic origin, always evident in Burges's work, all sense of incongruity is dispelled by the individual personality which distinguishes the design in all its parts, down to the smallest detail. Refined taste, exquisite figure work, and a free play of fancy within and without are the result of loving study ungrudgingly bestowed, leaving no doubt whatever as to Burges having done his very best. Compared with Fountains Abbey hard by in the same park, this florid little church necessarily takes a minor place, and in this comparative respect he had unquestionably an extremely difficult task. None the less, because of its force of individuality the building holds its own, leaving a lasting memory of undeniable excellence and recon-dite iconography.

J. L. Pearson's work delights us just the same. He told me he would rather carry out one building in this thorough manner than be employed on half a dozen which he could not personally work out in detail himself. You have only to look at his buildings from St. Peter's, Vauxhall, onwards in point of date, for the best evidence of

his skill, unsparing industry and artistic sincerity.

Street, his personal friend, trusted to no other hand than his own the drawing out of every feature of his designs, and it is well known that he modelled some of the ornament in clay for the carvers to work to at the Law Courts. As a draughtsman he was a master among the few of his time.

The Gothic Revival

may be dead so far as the style of contemporary work is concerned, but it undeniably influences the present generation of rising architects in ways not exactly apparent on the surface of things, and so long as the buildings of such men as I have named exist their work will live. The same is true of Nesfield and Bentley, and, in the making of architects, do you not think that the skill of Teulon, Butterfield and James Brooks, as well as George Gilbert Scott, jr., will furnish fine object-lessons in the future? Their work contrasts with that of the famous Sir Gilbert Scott, whose establishment at Spring Gardens furnished the most notable example of the possibilities of work carried out under wholesale conditions. With such a number of commissions it was impossible for the principal to draw out or even know about some of the designs issued from his office; consequently the work bearing his name is unequal, distinctive in one instance and failing in interest in another. The pick of the succeeding generation of architects furnished his staff, though it cannot be said that their master founded a school. His R.A. lectures on the development of the dome and Gothic architecture rank among the best scholarly attempts to further the making of cultured architects, and he was the real founder of the Royal Architectural Museum.

Measured Drawings of Old Work.

The purport of this retrospective glance in connection with the show of working drawings hanging on these walls is to direct the attention of some of our younger members to the necessity of their doing what the up-to-date student of thirty years ago did in measuring up old work of pure architectural merit. The battle of the styles has ceased to interest people, and very few at the present time show any real interest in mediæval architecture at all. No one hardly takes the trouble to draw or study it. This is a great mistake, for it is no use depending on the photographic camera, which in some ways is so helpful and in others so harmful in the making of architects. One drawing thoroughly made for study is worth any number of snapshot prints. Students will never graduate as architects on photography. The authors of the detail drawings collected on these walls learned their business by personal familiarity with the buildings they studied, and the knowledge they acquired was the result of drawing old work on the spot.

Those who speak slightly of the so-called "Gothic Revival" do so with more assurance than knowledge, and are apt to forget what we owe to the writings of Pugin, Ruskin and Morris. It was in an old shambling cock-loft in an obscure slum almost on the mudbanks of the Thames that Ruskin, Cockerell and Beresford Hope held crowded audiences in rapt attention while they lectured on the charms of Gothic architecture midst the self-same collection of examples and casts which now have been inherited by the Architectural Association.

William Burges, thirty years ago, when the Architectural Association was by no means so important a body as it is to-day, called it "the life-blood of the profession." Our Society is going stronger than ever, and you will need perhaps little imagination to picture to your minds with what generous zeal Burges, Street and their contemporaries

of the mediæval school would have gathered round in active support of what we are endeavouring to accomplish at the present time.

To what extent our educational scheme may be developed it is impossible to foretell, but friends have not been wanting in ambitiously advocating the founding of a "National School of Architecture." Personally, I doubt the principle of attempting to produce either good painters, sculptors or architects in any strictly Governmental school of art: it appears to me that the wiser plan must be to retain the control of art occupation teaching as far as possible in the hands of those who practise the particular arts in question, working, as far as circumstances will allow, on the lines of the historic art workers' guilds.

"We maintain that in a complex art like architecture a full knowledge of materials used in carrying out work and of all modes of construction is absolutely necessary; it is a mere waste of time to dwell incessantly and almost exclusively on one part of our work only, for without this knowledge an architect cannot claim to be an architect at all—he would be the merest amateur. Nay, more, we hold that no good architecture ever did exist or ever can exist apart from sound construction: good construction always has and always must go more to influence design than anything else; in short, it is the root and foundation of the whole art, from which all styles and all modes of good building have always sprung."

A discussion followed in which Mr. W. H. Seth-Smith, Mr. W. D. Caröe, Mr. Walter Millard and Prof. F. M. Simpson took part.

EDINBURGH ARCHITECTURAL ASSOCIATION.

AT last week's meeting of this Association Mr. A. Hunter Crawford, F.R.I.B.A., president, said he was sorry to observe that there was an inclination to take it for granted that they were all in favour of architects' registration. The best argument put forward in support of the proposal was that if there were a set of examinations it would necessitate everyone passing these before being registered, whereas at present there were only the Institute examinations, which were of a more or less voluntary character. It was agreed that a Council meeting be called for the purpose of considering the proposal. Referring to the question of public officials carrying out important architectural work, Mr. Crawford said the case of the Usher Hall had aroused a good deal of feeling among the members of the Association, and the general question had been brought up at the last Council meeting, when a committee was appointed to enquire into the matter and report. It was a thing they ought to put a stop to if possible.

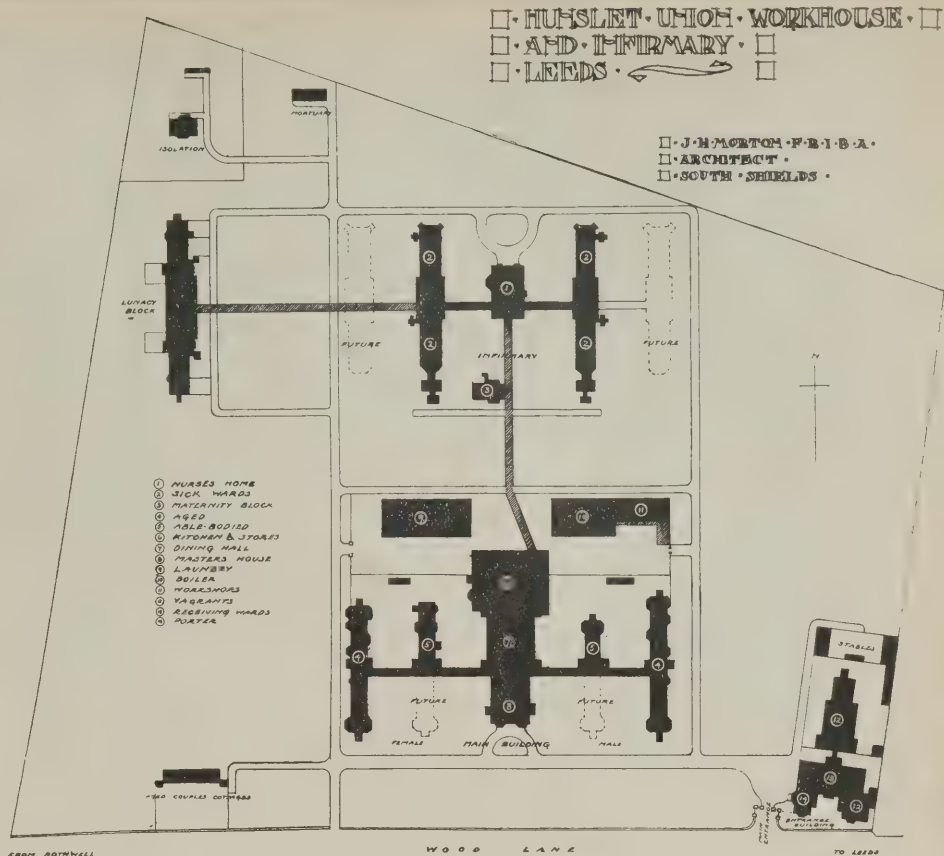
After the business had been transacted, Mr. W. Crum Watson read a paper on "An Architect's Holiday in Portugal." He commenced by making a brief survey of the history of architecture in Portugal. The earlier buildings in the country, he explained, were either from ideas brought from Galicia, or, as was the case at Alcobaça, designed on styles brought by the monks from France. In the earlier part of the sixteenth century the Portuguese prosperity, resulting chiefly from the Indian conquests, brought about many notable additions to the architecture of the country, and the king added largely to Batalha, Thomar and other places. At Belem, near Lisbon, Portuguese architecture reached the stage of its greatest elaborateness and richness, but after the Spanish Conquest in 1580 very little of any consequence was built.

HUNSLET WORKHOUSE AND INFIRMARY.

TOWARDS the end of last year the new buildings for the Hunslet Union, shown by the accompanying illustrations, were completed from designs by Mr. J. H. Morton, F.R.I.B.A., of South Shields. The cost has been approximately £86,000, which amount includes purchase of land, a great quantity of new furniture, expenses of raising loans, labour-saving appliances in kitchen and laundry, heating and electric-light installations, and the provision of administrative blocks large enough for a building twice the size, in anticipation of future requirements: these items amount to about £16,000, leaving the nett cost of the buildings at £70,000 for a present accommodation of 500, or £140 per bed; the workhouse when completed will accommodate 750 inmates, the cost per bed on this total being estimated at £120.

The site comprises 18½ acres, and the buildings consist of six groups, namely, entrance buildings, main building, laundry and boiler-house building, infirmary, lunacy building and isolation hospital. The entrance building, which is on the right of the principal gates, contains porters' rooms, receiving wards and vagrant wards, where vagrants of both sexes are provided for, principally on the cell system. In this building are also rooms in which to store the inmates' own clothing.

The main building, or workhouse proper, has the administrative block placed in the centre, in the front of which are the committee-room, business offices and master's house, and in the rear the dining-hall (having an open-timbered roof), kitchen (lighted from the roof and fitted with all the latest appliances), scullery, workrooms, matron's office and stores, bakery and flour stores. Upon each side of the administrative block, and connected by glazed conservatory corridors, are the pavilions for the male and female aged and able-bodied classes, with the necessary day-rooms, officers' rooms, bath-rooms, lavatories and offices. The floors of the entrance-hall, kitchen, &c., are terrazzo.



The laundry and boiler-house buildings are placed in a central position between the main building and the infirmary. The general plan comprises a receiving-room, washhouse for general work, and a separate washhouse for dealing with foul work. A fine range of draw-out drying horses is provided, with flannel and blanket drying-room over, heated by a hot blast, consisting of a heater fitted with a series of steam-heated pipes over

which fresh air is driven by a specially-constructed fan, and forced through a slotted distributing pipe, so that an equal temperature is maintained at all parts of the closet, whilst the partially saturated air is forced out, ensuring a constant current of heated air, giving results equal to outdoor drying under all conditions of weather. The ironing and finishing-room is of ample dimensions and is well

ventilated; after being dealt with in this department the goods are passed into the delivery-room to be sorted for delivery to the various blocks, aired and ready for immediate use. The whole of this plant has been supplied and fitted by Messrs. W. Summerscales & Sons, Ltd., laundry engineers and manufacturers, of Keighley, and comprises, amongst other fittings, steam engine, shafting and accessories, washing machines, hydro extractors, soap dissolvers, ironing machines, ironing stove and radial airing horse, steeping tanks, rinsing troughs, washing troughs, &c.; in fact, everything requisite for the equipment of a model institution laundry.

The boiler-house has space for three boilers, and close by are the electric-light house, with dynamo and accumulator-rooms, the workshops, coal-house and water tower. The boilers were made by Messrs. Clayton & Sons, Ltd., of Hunslet, and are fitted with a Green's patent coal economizer and the "Auto" patent mechanical stokers.

The infirmary is a complete building, connected with the main building by a covered corridor, from which the central



ONE OF THE INFIRMARY WARDS.



THE LAUNDRY (WASHHOUSE), HUNSLET WORKHOUSE.

portion of the building is entered, and from this point conservatory corridors to the left and right lead to the male and female pavilions, which are divided up into wards for the various classes of sick. The nurses' home occupies the central building, and contains nurses' bed, sitting- and recreation-rooms, &c., medical-officer's room and dispensary. The front of the infirmary faces south, and from it access to large covered balconies at the level of the first and ground floors is possible from all wards.

All the walls of the wards are of hard impervious plaster. The lavatories, w.c.'s, &c., are lined with glazed bricks. Internal angles of walls and between walls and ceilings, walls and floors, are quadrants. Projections or mouldings are absolutely dispensed with, so that there may be no lodgment of dust and every part of the building may be swept and kept clean. The heating of the large infirmary wards is by radiators and by means of central Burmantofts stoves, faced with faience, with horizontal flues in the thickness of the floors, which are supplied with fresh air direct from the outside. When warm, these flues distribute the heat evenly through the buildings.

The maternity block is in a convenient and quiet position between the infirmary and the main building.

The lunacy block, for thirty-six inmates, consists of ample accommodation for male and female attendants in the centre, with epileptics on each side on the ground floor and imbeciles above. The short-period lunatics are in one-storey buildings at each extreme end, with wards and padded and attendants' rooms. The lunacy block is connected with the infirmary by a covered way for administrative purposes.

The isolation hospital is also

a complete building, and has its own nurses' accommodation, washhouse and mortuary. It is situated in a remote position on the south-east corner of the site.

The aged married couples' cottages are on a high part of the site near Rothwell Haigh, entirely separate from the main buildings, and being next to the roadway will have pleasant gardens, with a light metal pallisading in front.

The elevations have been designed with little ornament, and what little there is is chiefly concentrated on the administrative building, proportion being studied more than ornament for effect.

The buildings are faced with Messrs. Armitage's (Robin Hood) bricks and stone dressings, and have Westmorland green slate roofs. The corridors and wards in the main buildings have dadoes of salt-glazed bricks, whilst the kitchens and sanitary offices are lined with cream-glazed bricks.

Heating and hot-water supply are by low pressure, steam being supplied to heat water in grates, two of which are placed under each block, one for heating and one for hot-water supply. From these generators the water is circulated throughout the building both for warming and all domestic purposes, including baths and lavatories. Messrs. Dargue, Griffiths & Co. Ltd., of Liverpool and London, carried out this portion of the work.

Economy in running is a feature of the scheme, and as far as possible exhaust steam is used. Another saving is effected by returning the condenser water to the boilers, and as this is already at a high temperature much less fuel is required to raise steam than if fed from cold water.

The buildings are lighted throughout by electricity. There are two combined compound

engines, each of about 41 E.H.P. and 41 dynamos in the electric-light station near the boiler-house, as well as a set of storage cells for supplying the lights, which there are 1,130 from 10.30 in the evening till about 6 the next morning, also for supplying current for other purposes during the day-time. Messrs. Shepherd Watney, of Leeds, were the consulting engineers for the whole of the electrical work.

The electrical power at present installed consists of one $\frac{3}{4}$ -h.p. motor driving economizer scrapers and one 5-h.p. motor driving the bakehouse machinery.

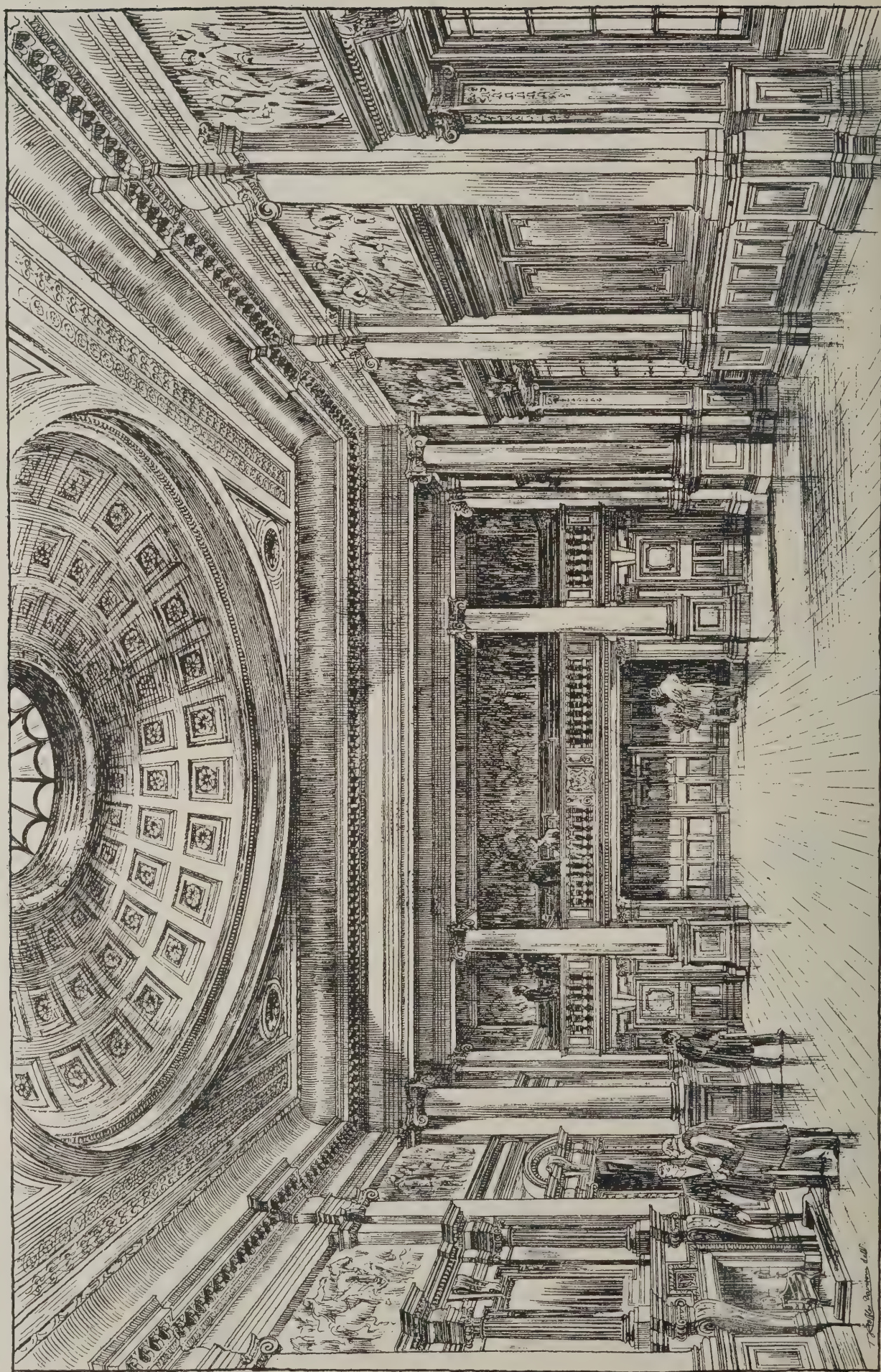
At the centre of each infirmary pavilion



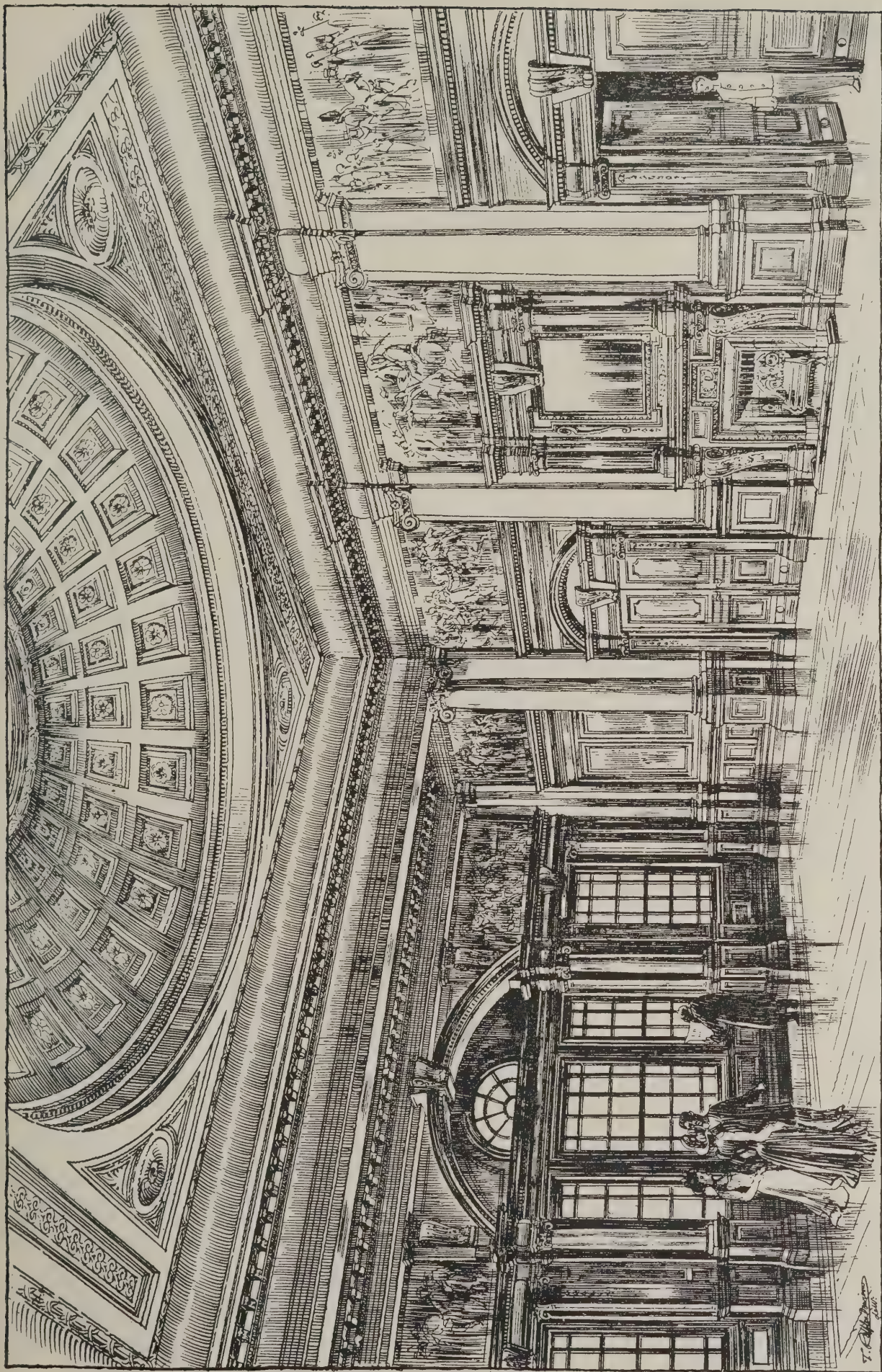
THE KITCHEN, HUNSLET WORKHOUSE.

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Supplement to
THE BUILDERS' JOURNAL AND ARCHITECTURAL RECORD
Wednesday, January 27th, 1904.



LOOKING SOUTH.



LOOKING NORTH.
NEW COUNCIL ROOM, EDINBURGH CITY CHAMBERS. R. MORHAM, CITY ARCHTCT.

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two electrical lifts (fitted by Messrs. Wilson Hartnell & Co., Ltd., of Kirkstall Road, Leeds), the cages being arranged to take a hand ambulance and two attendants. There are nineteen telephones, all communicating with a central switchboard at the porter's lodge, and there is also a system of electrical clocks.

The steam-cooking apparatus and kitchen fittings are by Messrs. Barford & Perkins, of Peterborough, and consist of three large steam-jacketed boiling pans, two steam closets for vegetables and fish, steam-heated hot-plate and carving table 9ft. long, double-oven fire-range, gas ranges and ovens and gas hot-plate with automatic burners, also a steam kettle for tea-making so fitted that it is impossible for the water to be drawn

THE INSTITUTE DRAWINGS.

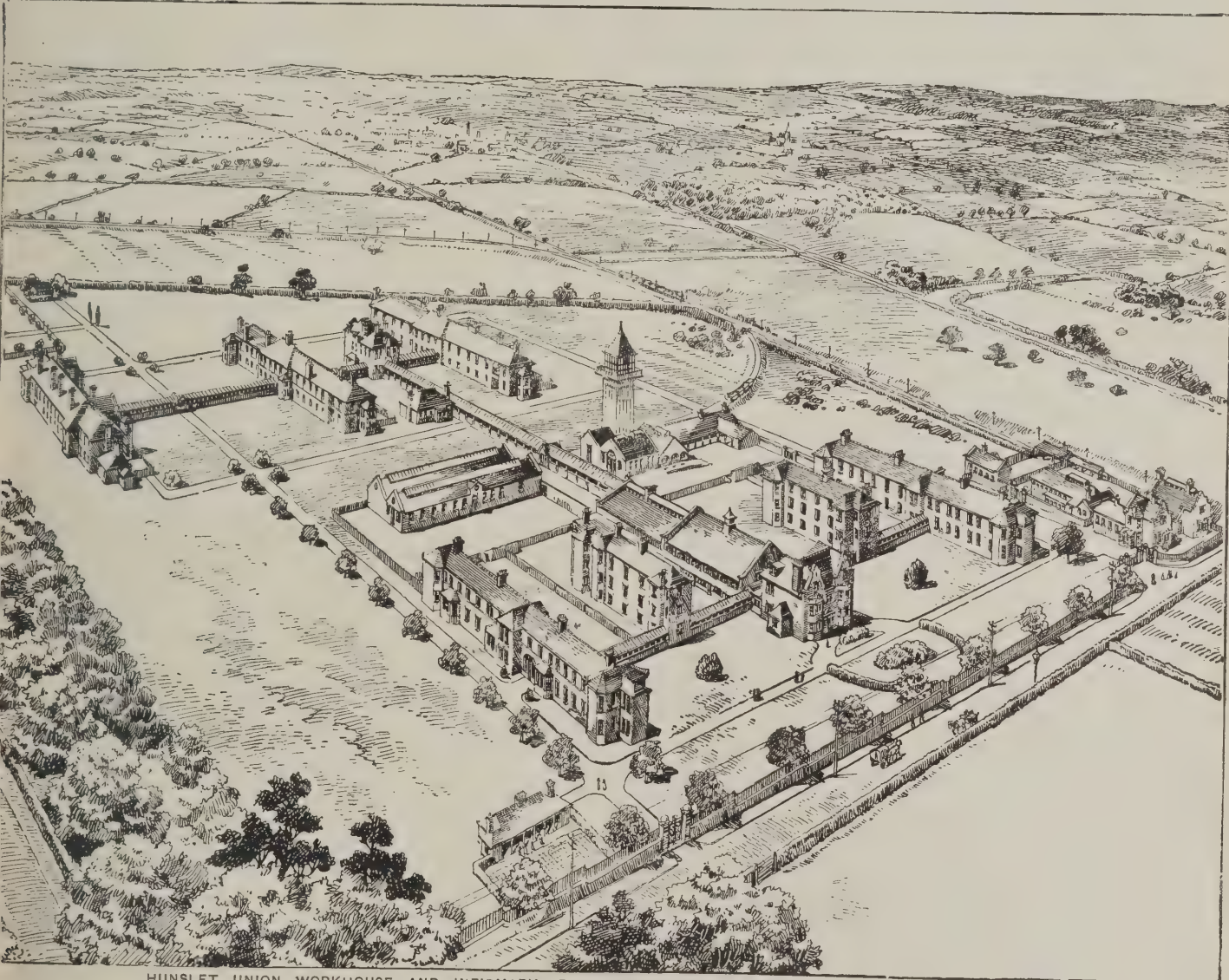
DURING the past week the drawings submitted for the several prizes and studentships of the Royal Institute of British Architects have been on exhibition at the Alpine Gallery, Mill Street, Conduit Street, W., where they are still to be seen till Saturday evening next, from 10 to 8.

Taken as a whole, the fourteen designs submitted for the Soane Medallion are poor, though some of them exhibit considerable ability. The subject given was a university theatre on an open site. The winning design, by Mr. Frederic J. Horth, of Hull, seems to have been chiefly successful by

wobbly line for which Mr. Fulton's work has apparently been the model.

Mr. David Smith's design, awarded a certificate of hon. mention, is worthy of very high praise. The elevation is by far the best of all sent in, and its drawing, too, also shows considerable skill. Here the plan, like several others, is circular with a corridor around: but it is not so well arranged as Mr. Horth's, and several parts are out of proportion--there is an entrance hall, for instance, a good deal bigger than the platform, and the lavatories are not well placed. A comparison between the rusticated joints as drawn on the main elevation and on the detail shows considerable disparity. But on the whole this design is a very meritorious one.

Of the other Soane designs, we note that



HUNSLET UNION WORKHOUSE AND INFIRMARY, ROTHWELL, LEEDS. J. H. MORTON, F.R.I.B.A., ARCHITECT.

ff until actually boiling, and a beef-tea extractor with water-jacket. The insides of the cooking pans were turned in the lathe and polished, and all steam- and water-pipes in the kitchen is of polished copper. The boiler-pans are fitted with a special arrangement for carrying off and condensing the waste steam, thus dispensing with the usual slightly steam escape pipes.

Messrs. Joseph Kaye & Sons, Ltd., of Leeds and London, supplied the locks, &c. (about 400 worth); Messrs W. J. Howell & Co., Albion Street, Leeds, fitted more than 650 blue holland blinds, with self-acting spring rollers; grates and stoves were supplied by the Teale Fireplace Co., Ltd., of Leeds; and ward and bedroom furniture, tables, &c., by Messrs. W. Lawrence & Co., Ltd., of Colwick, near Nottingham.

reason of its plan and interior treatment, both of which are very good. The plan of the hall proper is roughly square, with an entrance at each corner--male students from the front corners and female students and platform entrance at the other two; the elevations over these are very pleasing, and equally happy is the frieze treatment on the apsidal wall behind the platform: in fact the interior generally is well proportioned and refined, but the great dome covering the hall forms by no means a pleasant curve with the half-dome over the main entrance, and this defect would probably be accentuated in actual building. The drawings themselves are strong, and with the exception of the lantern light over the dome (which is quite out of perspective) the interior is well rendered, though we should like to see less of the

in many the purpose of the robing-room is little understood; in more than one case it is altogether too much mixed up with the public entrances. The design by "Rotunda" is one of the exceptions in this respect. "X" shows a hall about 120ft. high and some walls 20ft. thick, forgetful of acoustics and regardless of expense; "Rannock" reminds us forcibly of the Cape University competition, the two plans being alarmingly similar; "Jonah Man" is one of those designs where the robing-room is quite wrongly placed, and there is a gallery all round the hall which would be very awkward to get out of; "Black Star" is a Perpendicular Gothic design with a fan-vaulted roof, but with a very inconvenient plan; "Dom" is altogether heavy and ugly; "Sanctus Boscus" goes to a similar

source for his platform seats—a well-drawn elevation, but incorporating a tower 160ft. high, to no purpose; "Hæl" seems to have been inspired by the interior of Westminster Cathedral; "Ionian" provides a platform about a third as big as the rest of the hall; "Phoenix" includes a well-proportioned colonnade with organ over, at the platform end, the interior view being well coloured, though the figures suggest that a course at the Antique would be beneficial.

The Tite designs this year are more interesting than the Soane. The subject was an excellent one, "A Crescent in a Large City," a bank with other premises on either side being indicated. Eleven designs were sent in. The prize design, by Mr. Heaton Comyn, of London, is well carried out, the elevation of the bank building being extended to the other premises, with an archway on the road on each side. The pencil perspective is not so happy as some of the others. Mr. Arthur D. Nicholson, of Glasgow, to whom a medal of merit was awarded, shows a very fine water-colour perspective of an excellent design. "Red Shield" is also very good, and "Canny Alnwick" is rendered by an exceptional drawing: in fact almost all the eleven designs are highly praiseworthy and exhibit far better taste for monumental composition than, alas, we have lately seen in actual building on important sites in London.

The Grissell designs for a timber spire are above the average this year. The prize design, by Mr. J. W. Hepburn, of Hull, shows a high timber-capped tower, the detail of which is well worked out and the colour chosen with excellent effect. Several of the other designs are meritorious, and in general they display a close application to the constructional problem involved. This prize is a very good one, and we are glad to see so many as fourteen designs sent in for it.

Of the three sets of strainers submitted for the Pugin Studentship, Mr. Mears' is most admirable, his drawing of the interior of King's College Chapel, Cambridge, being particularly fine. Mr. W. S. A. Gordon's work is also good, and includes an interesting sheet of the "Black Swan" inn at York, with details inside and out.

The Institute Silver Medal for measured drawings has not brought forth anything exceptional this year. Mr. Laurence M. Gotch's drawings of St. Oswald's, Ashbourne, are skilfully done but not particularly interesting. Mr. C. Lovett Gill's of St. James's Church, Piccadilly, deserve special mention, and, as of a most attractive subject, the drawings of the Priory Church of St. Mary and St. Blase, Boxgrove, by "The Birds."

The Owen Jones are much about the same as in previous years. The prize drawings by Mr. W. Davidson are well carried out, though Mr. Morley's interested us more, and we also took special note of a drawing by Mr. M'Lachlan of the interior of S. Anastasia, Verona.

What strikes one most about the Arthur Cates prize is that "a good ha'porth" is asked for—two out of the four competitors sending eleven strainers, one fifteen and the fourth eighteen. Even then the prize has been withheld, only half of it (twenty guineas) being gained by Mr. F. Winton Newman, who shows a number of very creditable drawings, as does also Mr. Baxter Greig, honourably mentioned.

The Removal of King's College Hospital.—As announced, King's College Hospital is to be removed to Camberwell, on the south side of the river. Here the hospital has been presented with a site of twelve acres, in clear open ground, only a few minutes' walk from Camberwell Green. This site will ultimately enable a hospital to be built with accommodation for 600 persons, on the scale of fifty patients to the acre. The present project is to build for 300.

Keystones.

Barnes Parish Church is proposed to be enlarged.

The Liverpool Cathedral Pamphlet, illustrated with sketches, has now been issued by the Committee from the Church House, Liverpool, price 3d.

Stage Furnishing.—Certain well-known firms, notably Messrs. Oetzmann, of Hampstead Road, have for years made a special feature of stage furnishing. Messrs. Oetzmann's latest effort in this direction is in "The Duke of Killikrankie" at the Criterion Theatre.

Mr. Frederick Wheeler, F.R.I.B.A., of 6, Staple Inn, W.C., and Horsham, has taken his son, Mr. C. W. F. Wheeler, A.R.I.B.A., into partnership, so far as his London practice is concerned, which will in future be carried on at the above London address under the name of Frederick Wheeler & Son.

Mr. F. Derwent Wood has been commissioned to execute the marble statue of the late Charles Haddon Spurgeon which is proposed to be placed in a niche in the entrance hall of the Baptist Church House, Southampton Row. The commission is the result of a competition between six sculptors. Mr. Hamo Thornycroft, R.A., was the adjudicator.

Municipal and County Club, Whitehall Court, S.W.—Sir Francis J. S. Hopwood, K.C.B., C.M.G. (Permanent Secretary to the Board of Trade), will be the guest of the evening at a house dinner and smoking concert to be held on Monday, February 8th, at 7.30 p.m. Mr. Laurence Gomme, F.S.A. (clerk to the London County Council), will preside.

Peterborough Cathedral Restoration.—An appeal is to be issued for the completion of the great work of restoration which was entered upon in 1883, when the lantern tower was threatened with destruction, and which has already cost over £100,000. The works still required to complete the safety of the fabric are repairs to the north and south transepts, for which the sum of £1,500 is needed.

New Board Schools at York, on the Haxby Road, have been erected from designs by Mr. Walter H. Brierley, of York. Two large halls form the central feature of the front elevation: around them are grouped the classrooms, each accommodating sixty pupils, together with four cloak-rooms. Accommodation for the teaching staff has been provided on a mezzanine floor. The school is designed for 1,200 pupils. Externally it is of red brick with Hodington stone dressings.

The Garden City Scheme.—Speaking at a recent meeting of the Garden City Association, Mr. Rider Haggard said that in the beginning he was sceptical of the success of this scheme, but after inspecting the place his scepticism was to a very large extent dissipated. He could see no reason why the thing, if carried through on the lines suggested, should not be successful in a financial and every other way, provided only there was sufficient capital to start it in a thoroughly business-like manner. (The site of the first garden city is near Hitchin.)

New Police Buildings for Oldbury.—The Worcestershire County Council has acquired possession of the old manor-house adjoining the police-court at Oldbury, together with four houses in Wesley Street and another house at the back of the present buildings. It is intended to demolish this property and erect new buildings in the vicinity of the present police-court. The manor-house is an old building, and early in the eighteenth century was surrounded by extensive pleasure grounds. For the last fifty years, however, it has been utilized as a common lodging-house.

York Workhouse is proposed to be extended. The Board of Guardians have called in Mr. J. H. Morton, F.R.I.B.A., of South Shields, to advise them.

The St. George's Circus Obelisk.—The Bridge House Estates Committee of the City Corporation have informed the Southwark Borough Council that, in their opinion, the obelisk at St. George's Circus should not be moved to permit of the erection of a clock tower.

Decorative Art Exhibition in Paris.—The Société des Artistes Décorateurs is holding its first exhibition in the Petit Palais, Paris. The object is to afford the public an opportunity of inspecting the latest models of furniture and the most recent styles of interior decoration.

Truro Cathedral.—The central tower and spire, built at a cost of nearly £15,000, was dedicated last week. On each of its four sides the tower has three two-light windows deeply recessed in three orders. These windows are visible from the interior of the church and form the light of the lantern. The vaulted ceiling comes immediately above them, rising about 35ft. above the vaulted ceiling of the nave.

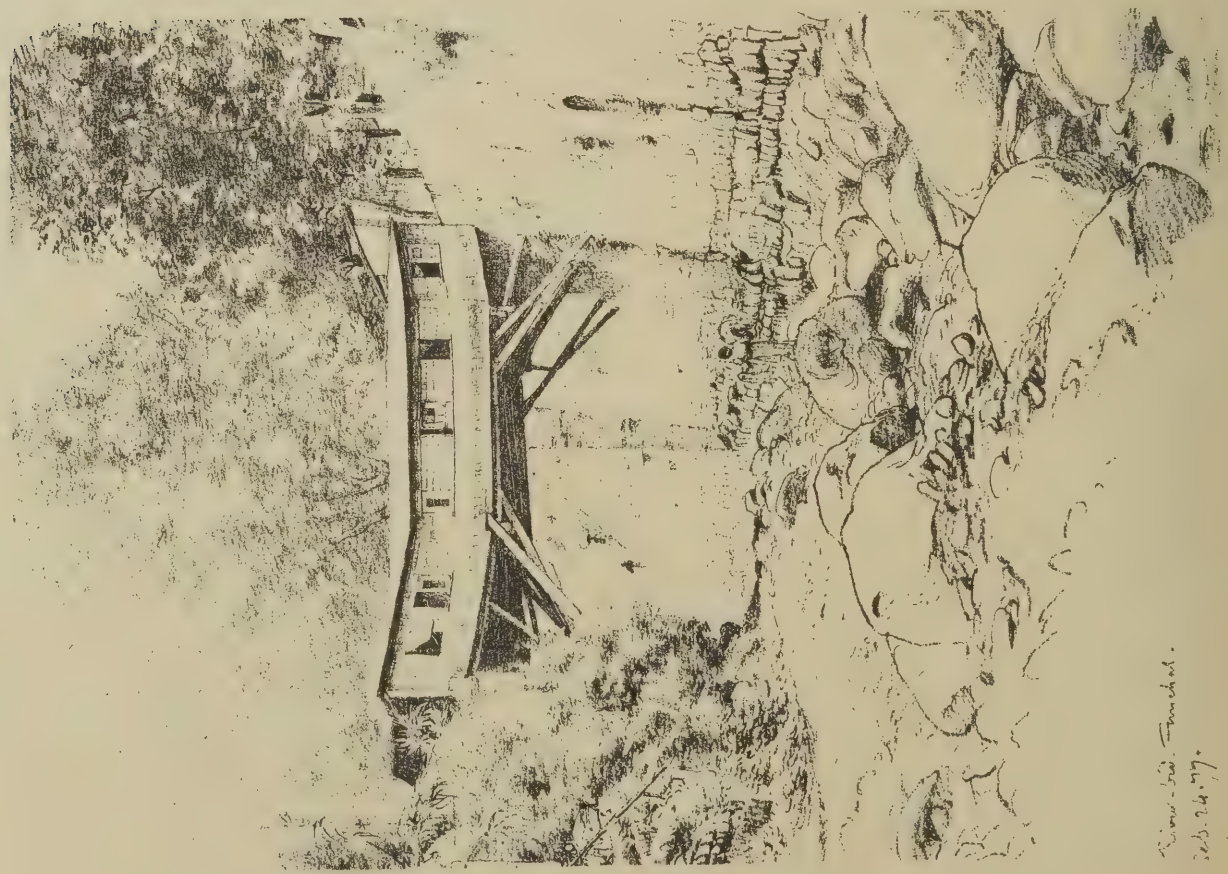
A Memorial Church to Newman is being erected at Birmingham from designs by Mr. Doran Webb. On either side of the nave (33ft. wide and 88ft. long) will open out six apsidal chapels, floored in mosaic marble. The roofs of the halls are ultimately to be mosaic, but for the present will be left in rough concrete. The roof of the church is to be a barrelled roof, made in sweet chestnut, and all the exterior of it will be leaded. The height of the cornice, exterior and interior, will be 52ft.

The Ancient Lights Bill.—One of the chief clauses in this Bill is to create a tribunal with very full powers, including assessment of compensation and alterations, if any, to the dominant owners' premises, and any alteration to be made in carrying out the intended new building so as to prevent or lessen obstruction to the lights of the dominant tenant. The Bill also proposes to abolish rights of light on streets, and otherwise curtails the strong powers which the dominant owner now has.

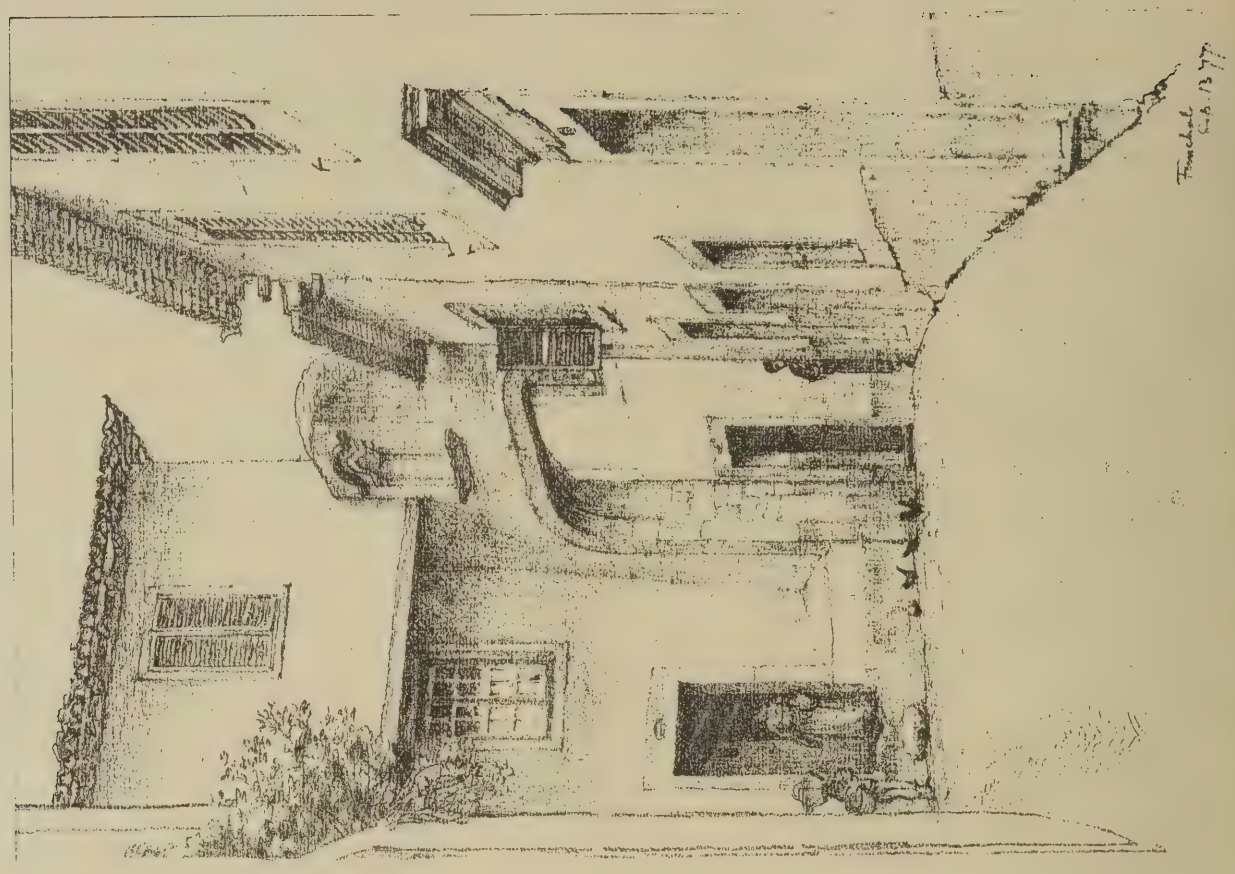
The new Midland Station at Nottingham has now been opened. It will in future be entered from Carrington Street, the main thoroughfare between the city and Trent bridge, and the platforms are below, connecting which are three broad stairways and two luggage lifts. The alterations, which were begun about two years ago, are not yet completed. It is expected that nine months will elapse before the entire scheme is completed. Adjoining the new station a large block of offices is also being erected for the use of the district superintendent and his staff.

Pictorial Mosaics.—Mr. Harrison Townsend, F.R.I.B.A., read a paper on "Pictorial Mosaics" before the last meeting of the Bristol Society of Architects. After dealing with the history of mosaics, from the Roman basilicas down to the fifteenth century, Mr. Townsend went on to speak of the following centuries. In the seventeenth and eighteenth the art sunk to the lowest depths, and in the modern nineteenth-century work at St. Peter's, Rome, mosaic became a dead art. Mr. Townsend briefly alluded to modern work in England, and some examples by Mr. Anning Bell and Mr. Walter Crane were shown on the screen; the work of Burne-Jones in the English church at Rome was also shown. From these designs it was evident that we had the seeds for a revival of what, to quote Ghirlandajo's opinion, was the "true painting for eternity."

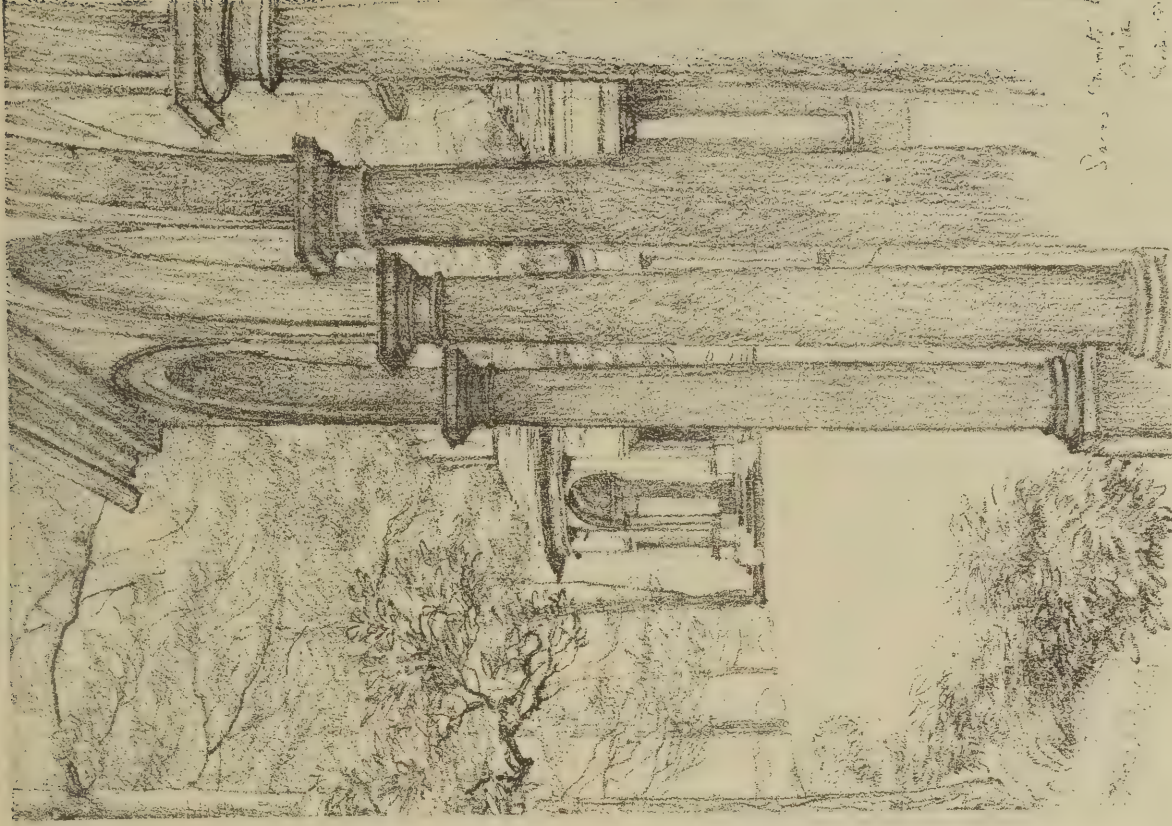
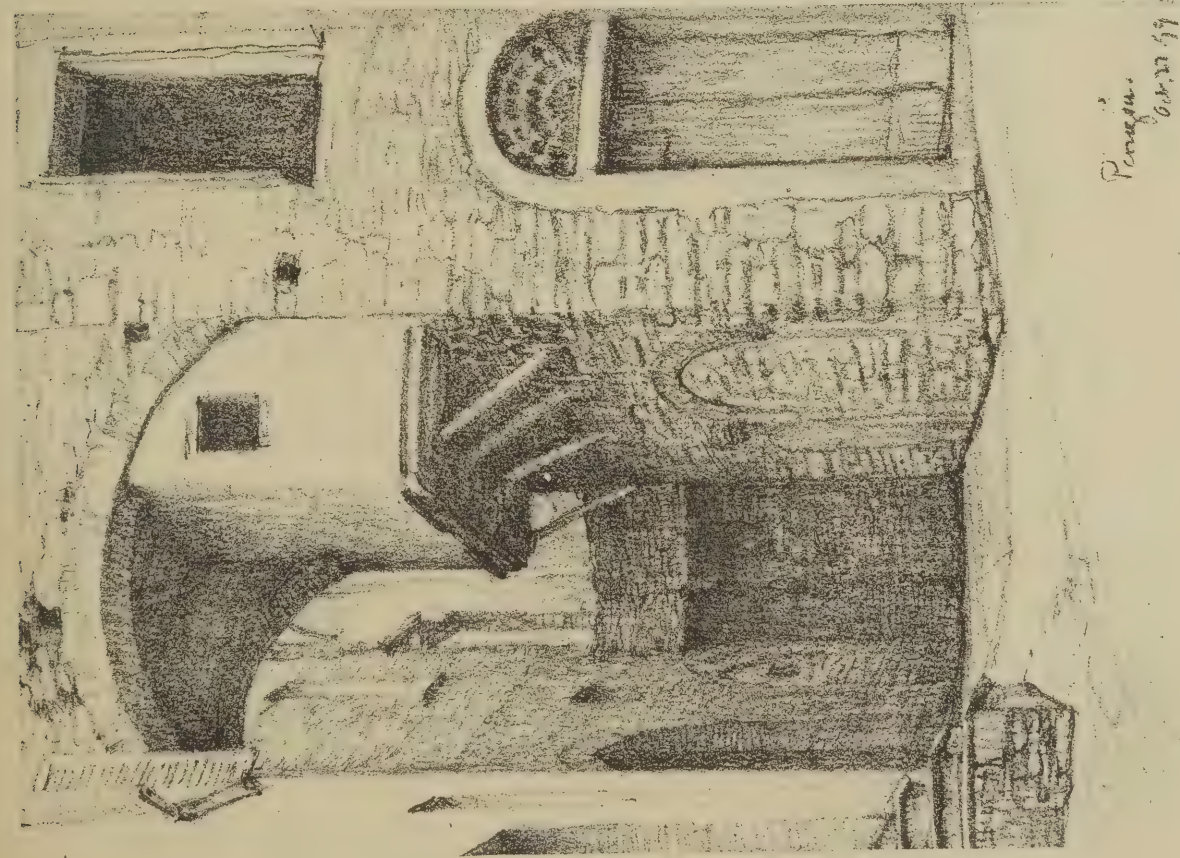
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View - 500. Frenches.
 Feb. 26, 1904.



Frenches.
 Feb. 13, 1904.



"INK-PHOTO" R. J. EVERETT & SONS, 86 LUDGATE HILL, LONDON, E.C.

DRAWINGS OF ARCHITECTURE: SIR EDWARD J. POYNTER, P.R.A.

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by 2 for distribution and divide by 10 for factor of safety. Then in the present case

It is not likely that you could obtain a situation in Australia while residing in this country. The building trade in Australia is by no means booming, there being a slump in many districts, and if you go out you

should have sufficient money to keep you for a year at least until you obtain a situation by personal canvassing. You should also be prepared to rough it if need be.

NEWPORT, MON.—AMBITIOUS writes: "What possibilities are there in America (say in New York) for competent architects' assistants? Is there an architectural paper in which one could advertise? Also the same as regards Canada and Australia."

America is well supplied with its own architects' assistants, who are better trained than those here; but you could advertise in "The American Architect," 238, Tremont Street, Boston, Mass.; "The Canadian Architect," C. H. Mortimer Publishing Co., Ltd., Confederation Life Buildings, Toronto, Canada; and "Building, Engineering and Mining Journal," 49, Post Office Chambers, Pitt Street, Sydney, Australia.

BOOTLE.—J. M. W. writes: "I am very anxious to go abroad as an architectural draughtsman, and it has struck me that New Zealand is a place where an energetic man might have golden opportunities. I have had about six years' experience, and at present have a very good position, but am anxious to broaden my experience and to see the world."

New Zealand offers the best opportunities to an architectural draughtsman at the present moment, but he should have sufficient money to keep him for some time until he can get a situation, and, as noted above, must not mind roughing it a bit.

NEWCASTLE-ON-TYNE.—E. P. is referred to the above in answer to a similar enquiry.

Schedules of Prices.

LEE.—SUBSCRIBER writes: "Where can I obtain a schedule of prices such as that issued by the War Office, which, I believe, is difficult to get? I also wish to know of any quick method of setting out a block of buildings in perspective, and the best book to obtain dealing with this subject."

There are Laxton's or Lockwood's Builders' Price Books, but why not obtain the War Office schedule, by application? Middleton's "Architectural Perspective (2s. 6d. from these offices) is a very good book, and clearly explains quick perspective-making.

Relaying a Drain.

CROYDON.—E. B. writes: "Some clients of mine own stabling in the rear of a shop occupied by them. Adjoining is another block of stabling, separated only by a wooden partition. Notice as to sanitary defects has been served by the local authorities on the two owners, and I have endeavoured to negotiate with the adjoining owner in order for him to pay half the cost of relaying the drain, but he refuses. The drain cannot be termed a sewer, as the two buildings are within the same curtilage and practically under the same roof. In the event of my clients relaying the drain, can they recover a proportion of the cost from the adjoining owner? If my clients are unable to recover, would their liability for the repair of the old drain on their premises cease if they ignored it and laid down a separate drain entirely for their own use?"

You had better construct a new drain and leave the adjoining owners to see after their own drain. We do not consider you would be at all liable for the repair of the old drain, but the adjoining owners would have the right to enter on your property to repair it. If they reconstruct it, however, we think you have the right to insist upon them draining their premises on their own property, i.e., through the front to the high road. Another course open to you is to let the sanitary authority execute the work of repair, and they will then charge the cost to both of you.

Builders' Notes.

South Wales Sanitary Inspectors.—The seventh annual meeting of the South Wales and Monmouthshire Sanitary Inspectors' Association was recently held at Swansea, when the following officers were elected:—President, Dr. W. Williams, M.A., Penarth; chairman, Mr. T. W. Warren, Cardiff; vice-chairmen, Messrs. W. Williams (Rhondda) and W. L. Lambert (Swansea).

Harrogate Builders.—At the recent annual dinner of the Harrogate and District Master-Builders Federation, Alderman Fortune said that, given proper laws in regard to land and rating, Harrogate could be made a garden town. To some extent it was such a town now, but it could be made a better garden town if it were not a question of high price of land and high rating upon buildings. They ought to strive to get the laws altered.

The Cement Trade at Northfleet and District is very much depressed, and men are being discharged from the various works in batches, sometimes as many as fifty and sixty. They cannot find employment, and at the present time there are hundreds out of work. Only one factory, that belonging to Mr. A. Tolhurst, has not yet discharged any hands, and the owner states that he has between 5,000 and 6,000 tons of cement stored away for which he is unable to find purchasers.

Midland Federation of Building Trade Employers.—In the report of the Midland centre of the National Federation of Building Trade Employers, presented at the annual meeting held at Birmingham under the presidency of Mr. C. H. Barnsley, reference was made to the depressed condition of the industry throughout the Midland Counties, the information from some localities showing that the conditions had not been so discouraging for a long time. The following officers were elected for the ensuing year:—President, Mr. J. Sharman Wood, J.P. (Worcester); vice-presidents, Mr. H. Willcock (Wolverhampton) and Councillor F. G. Whittall (Birmingham).

Bristol Master-Builders' Association.—At the annual meeting of this Association, held last week under the presidency of Mr. Alfred Dowling, the secretary presented the annual report, in which it was stated that the building trade of the city during 1903 had been relaxed. The "hardy annual" known as the Plumbers' Registration Bill had been again introduced into Parliament, and the Association requested the four members for the city to oppose the measure, it being considered useless and unnecessary. The following resolution passed by the Association in 1901, dealing with the question of time limit, was re-confirmed last year, and the members were urged to rigidly adhere to it: "That no member of this Association shall tender for work in competition where he is required to state the time in which he will complete the said work." The Association considered the various clauses in the Corporation contracts in vogue, and accepted certain alterations, but declined to send in priced bills of quantities with tenders, as being contrary to the recommendation of the National Federation of Building Trade Employers of Great Britain. National Federation meetings had been held in London and Cardiff, and at the latter the gratifying announcement was made that, after years of negotiation, a satisfactory form of contract, drawn up by the R.I.B.A., the Institute of Builders and the National Association of Master Builders of Great Britain and Ireland, had been actually accomplished, and was described as one of the most satisfactory undertakings ever brought about by those associations. This contract is now in use.

Current Market Prices.

		£	s.	d.	£	s.	d.
FORAGE.							
Beans ..	per qr.	1	14	0	2	0	0
Clover, best ..	per load	4	5	0	4	10	0
Hay, good ..	do.	3	12	6	4	0	0
Sainfoin mixture ..	do.	3	15	0	4	5	0
Straw ..	do.	1	10	0	2	0	0

OILS AND PAINTS.							
Castor Oil, French ..	per cwt.	1	0	5	—	—	—
Colza Oil, English ..	do.	1	3	6	—	—	—
Copperas ..	per ton	2	0	0	—	—	—
Lard Oil ..	per cwt.	2	15	0	2	17	0
Lead, white, ground, carbamate ..	do.	1	4	10	—	—	—
Do. red ..	do.	1	0	4 1/2	—	—	—
Linseed Oil, barrels ..	do.	0	17	0	—	—	—
Petroleum, American ..	per gal.	0	0	7 1/2	0	0	7 1/2
Do. Russian ..	do.	0	0	5 1/2	0	0	7 1/2
Pitch ..	per barrel	0	8	0	—	—	—
Shellac, orange ..	per cwt.	10	14	0	—	—	—
Soda, crystals ..	per ton	3	6	0	3	5	0
Tallow, Town ..	per cwt.	1	2	0	1	6	3
Tar, Stockholm ..	per barrel	1	2	0	—	—	—
Turpentine ..	per cwt.	2	6	7 1/2	—	—	—

METALS.							
Copper, sheet, strong ..	per ton	73	0	0	—	—	—
Iron, Staffs., bar ..	do.	6	0	0	8	10	0
Do. Galvanised Corrugated sheet ..	do.	10	7	6	10	10	0
Lead, pig, Soft Foreign ..	do.	11	13	9	11	13	0
Do. English common brands ..	do.	12	0	0	—	—	—
Do. sheet English 3lb. per sq. ft. and upwards ..	do.	14	0	0	—	—	—
Do. pipe ..	do.	15	0	0	—	—	—
Nails, cut clasp, 3in. to 6in. ..	do.	9	5	0	—	—	—
Do. floor brads ..	do.	9	0	0	—	—	—
Steel, Staffs., Girders and Angles ..	do.	5	10	0	6	5	0
Do. do. Mild bars ..	do.	6	0	0	6	5	0
Tin, Foreign ..	do.	126	17	6	127	7	6
Do. English ingots ..	do.	127	7	6	128	12	6
Zinc, sheets, Silesian ..	do.	23	12	6	—	—	—
Do. do. Vieille Montagne ..	do.	24	10	0	—	—	—
Do. Spelter ..	do.	21	5	0	21	12	6

TIMBER.							
Soft Woods.							
Fir, Dantzic and Memel ..	per load	1	13	0	3	0	0
Pine, Quebec, Yellow ..	do.	5	10	0	6	5	0
Do. Pitch ..	do.	2	11	0	2	16	0
Laths, log, Dantzic ..	per fath.	4	10	0	5	10	0
Do. Norrköping ..	per bundle	0	0	7 1/2	—	—	—
Deals, Mesane, White 2nd, 3x9 per stand. 9	do.	10	0	—	—	—	—
Do. Söderhamn, Yellow, 3rd, 3x9	do.	16	0	0	—	—	—
Do. do. do. 3x8	do.	12	0	0	—	—	—
Do. Oserko, Yellow, 4th, 3x9	do.	11	10	0	—	—	—
Do. do. do. Unsorted, 3x9	do.	8	10	0	8	15	0
Do. Soroka, Yellow, 3rd, 3x11	do.	10	10	0	—	—	—
Do. do. do. 3x9	do.	11	10	0	—	—	—
Do. do. do. 4th, 3x11	do.	8	15	0	—	—	—
Do. do. do. 3x9	do.	9	15	0	—	—	—
Do. Petschora, Yellow, 3rd, 3x9	do.	11	15	0	—	—	—
Do. Archangel, Yellow, 3rd, 3x11	do.	11	10	0	11	15	0
Do. do. do. 3x9	do.	12	15	0	—	—	—
Do. Kem. Yellow, 3rd, 3x9	do.	12	15	0	—	—	—
Do. Stanislaw's, White, Unsorted, 3x11	do.	8	0	0	—	—	—
Do. do. do. 3x9	do.	8	0	0	—	—	—
Do. Skelleftea, Yellow, 3rd, 3x7	do.	7	15	0	—	—	—
Do. Nyhamn, White, 5th, Inferior, 3x9	do.	6	7	6	6	10	0
Do. St. Petersburg, White, 1st, 3x11	do.	8	10	0	12	0	0
Do. do. do. 2nd, 3x11	do.	8	15	0	—	—	—
Do. do. do. 3rd, 3x9	do.	7	15	0	—	—	—
Do. do. do. Unsorted, 3x9	do.	8	10	0	—	—	—
Do. do. do. do. 3x7	do.	8	0	0	—	—	—
Do. do. do. Yellow, 1st, 3x11	do.	13	15	0	17	15	0
Do. do. do. 3x9	do.	11	10	0	15	15	0
Do. do. do. 3rd, 3x9	do.	8	10	0	—	—	—
Do. do. do. 3x7	do.	7	10	0	—	—	—
Do. Botwoodville, Yellow, Pine, 3rd, 3x11	do.	10	5	0	—	—	—
Do. do. do. 3x12	do.	10	0	0	—	—	—
Do. do. do. 3x13	do.	10	0	0	—	—	—
Do. do. do. 3x10	do.	9	15	0	—	—	—
Do. do. do. 3x9	do.	9	0	0	9	5	0
Do. do. do. 3x8	do.	8	10	0	—	—	—
Do. do. do. 3x7	do.	8	0	0	8	5	0
Do. St. John's Bright Spruce, Unsorted, 1st, 2nd & 3rd, 3x11	do.	8	10	0	8	15	0
Do. Quebec, Yellow Pine, 3rd, 3x9	do.	10	10	0	—	—	—
Do. do. do. 3x7	do.	9	10	0	—	—	—
Do. do. Spruce, 1st, 3x7, 3x9 & 3x11	do.	13	0	0	—	—	—
Do. do. do. Unsorted, 3x11	do.	8	10	0	—	—	—
Do. do. do. do. 3x9	do.	8	15	0	—	—	—
Do. do. do. do. 3x8	do.	7	15	0	—	—	—
Do. do. do. do. 3x7	do.	7	10	0	—	—	—
Battens, all kinds ..	do.	6	5	0	12	5	0
Scantlings ..	do.	6	1	0	9	15	0
Flooring Boards in. pre-							
pared, 1st ..	per square	0	10	6	10	9	0
Do. 2nd ..	do.	0	11	0	—	—	—
Do. 3rd, &c. ..	do.	0	6	9	0	9	6

Tenders.

Information from accredited sources should be sent to "The Editor" at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Addressed postcards on which lists of tenders may be stated will be sent post free on application to the Manager, BUILDERS' JOURNAL, 6, Great New Street, Fetter Lane, E.C.

Birmingham.—For the construction of five pumping stations for the Birmingham, Tame & Rea District Drainage Board:—

H. Barnes	£1,880	0	0
Smith & Pitts	1,833	0	0
W. & J. Webb	1,800	0	0
Stafford & Mansfield	1,790	0	0
W. Sapote & Sons	1,768	0	0
H. Willcock & Co., Wolverhampton	1,775	0	0
J. Dallow & Sons, Blackheath, Staffs	1,750	0	0
Isaac Langley, Tyburn, near Birm- ingham	1,749	12	5
W. Hopkins	1,700	0	0
T. Johnson	1,667	0	0
E. Garfield	1,650	10	0
W. H. James, Sutton Coldfield	1,548	0	0

* Accepted. [Rest of Birmingham.]

Bishops Castle (Shropshire).—For the erection of new Primitive Methodist Chapel. Mr. J. Harry Pickard, architect, Whitchurch, Shropshire. Quantities by architect:—

P. McLachlan, Birkenhead	£1,480
Vickers & Sons, Tilsdon	1,400
G. Bullock, Shrewsbury	1,357
T. Speake, Church Stretton	1,347

* Slightly reduced and accepted.

Deal.—For the proposed rebuilding of the "Five Ringers" Inn, and other works in connection therewith, at Deal. Messrs. W. J. Jennings and J. F. Duthoit, architects, Dover and Canterbury:—

W. J. Adcock, Ladywell Yard, Dover	£1,609	8	9
E. T. Turner	1,520	0	0
J. E. Hayward & Son	1,515	0	0
G. F. Keeler, Dover	1,410	0	0
J. W. Sandcraft, Dover Road, Walmer	1,400	0	0
T. T. Denne, Walmer	1,387	0	0
E. Trevers	1,305	0	0
G. B. Cotton	1,264	0	0
J. E. Turner, Cornwall Road, Walmer	1,257	11	0

* Accepted. [Rest of Deal.]

Driffield.—For extensions to the workhouse infirmary. Mr. Joseph Shepherdson, architect, Driffield and Bridlington:—

J. Sawden, Bridlington	£2,865	12	2
A. Leason, Driffield	2,850	0	0
T. S. Ullathorne, Selby	2,797	9	6
J. R. Stork, Bridlington	2,744	18	11
A. A. Booth, Bridlington	2,704	17	0
Sawden Brothers, Filey	2,700	0	0
Smallwood & Shaw, Bridlington	2,677	5	10
W. Leason & Son, Driffield	2,675	0	0
F. Thornton, Driffield	2,668	13	6
Sawden & Sons, Langtoft	2,610	0	0
M. Gage, Driffield	2,581	0	0
C. W. Dry, Driffield	2,575	0	0
H. Naylor, Driffield	2,570	0	0

* Accepted.

Gillingham (Kent).—For the erection of a new school at Napier Road to accommodate 600 children, for the Gillingham Borough Council Education Committee:—

R. Elvy, Southend-on-Sea	£11,869	11	10
J. G. Shipland, Sutton	11,607	0	0
W. Smith & Sons, Croydon	11,486	0	0
Perry & Co., Bow, E.	11,268	0	0
Kemp Brothers, Rainham	11,009	13	9
J. Longley & Co., Crawley	10,952	0	0
Skinner, Chatham	10,867	0	0
J. Shillitoe & Son, Bury St. Ed- munds	10,845	0	0
G. E. Wallis & Sons, Maidstone	10,839	0	0
H. E. Phillips, New Brompton	10,640	0	0
F. Miskin, Gravesend	10,546	4	9
R. Avar, Maidstone	10,523	0	0
L. Seager, Sittingbourne	10,488	4	10
Mallet & Wood, Luton	10,384	0	0
B. E. Nightingale, London, S.E.	10,334	0	0
G. H. Eastwood, Market Har- borough	10,300	0	0
J. A. Leonard, Rochester	10,200	0	0
A. G. Candler, New Brompton	10,119	0	0
J. Appleby & Sons	10,010	0	0
E. W. Filley, Chatham	9,930	0	0
G. Gates, Rochester	9,750	0	0
Harris, Nelson Road, Gillingham	9,701	0	0
West Brothers, Rochester	9,695	0	0
Gann & Co., Whitstable	9,599	0	0

* Accepted.

Hounslow.—For the erection of the following buildings at the Treaty House estate:—(1) Public offices; (2) public swimming-baths, &c.; (3) public library for the Heston and Isleworth U.D.C. Messrs. Nowell Farr & A. E. Kates, architects, Brunswich House, Brentford. Quantities by Mr. T. J. Carless, 39, Old Queen Street, Westminster:—

Public Offices.	
Chamber Brothers, Ealing	£17,202
J. W. Brooking, Richmond	16,989
F. & H. F. Higgs	16,631
F. E. Davey, Ltd., Southend	16,557
Cropley Brothers, Epsom	16,334
Higgs & Hill, Lambeth	16,200
Shillitoe, Bury St. Edmunds	16,000
M. Hughes, Birmingham	15,995
Mowlem & Co., Westminster	15,978
Nightingale, London, W.	15,911
Galbraith Brothers	15,738
Hughes & Stirling, Boodle	15,695
W. Wallis, Balham	15,695
Godson & Son, Kilburn	15,680

Messum & Son	£15,666
Lorden & Son, Upper Tooting	15,500
Saunders, Croydon	15,491
Leslie & Co., Kensington	15,200
Gough & Co., Hendon	15,200
Ferguson & Co., Holborn	15,189
Patman & Fotheringham, London	15,041
Cowley & Drake, Willesden	15,025
Sole & Son, Richmond	14,990
Chamberlain, Addlestone	14,974
Wisdom Brothers, Isleworth	14,800
Hadley & Co., Old Hill	14,781
J. Dorey & Co., Brentford	14,636
C. G. Hill, London	14,500
A. & B. Hanson, Southall	14,448

[Architect's estimate, £15,000.]

Baths and superintendent's cottage.

F. & H. F. Higgs	13,345
J. W. Brooking	13,326
Mowlem & Co.	12,970
Chamber Brothers	12,930
Higgs & Hill	12,900
Cropley Brothers	12,858
Lorden & Son	12,790
Nightingale	12,780
Godson & Son	12,656
Hughes & Stirling	12,522
Hadley & Co.	12,508
Shillitoe	12,500
Saunders	12,497
Galbraith Brothers	12,400
Leslie & Co.	12,273
Sole & Son	12,272
W. Wallis	12,241
F. E. Davey, Ltd.	12,137
Cowley & Drake	12,001
M. Hughes	11,950
Patman & Fotheringham	11,923
Messum & Son	11,877
Gough & Co.	11,875
Ferguson & Co.	11,807
C. G. Hill	11,600
Wisdom Brothers	11,345
A. & B. Hanson	11,333
J. Dorey & Co.	11,090

[Architect's estimate, £10,500.]

Library.

J. W. Brooking	5,597
Chamber Brothers	5,512
Hughes & Stirling	5,442
F. & H. F. Higgs	5,317
Cropley Brothers	5,276
Higgs & Hill	5,200
Messum & Son	5,175
W. Wallis	5,173
Lorden & Son	5,149
F. E. Davey, Ltd.	5,093
Gough & Co.	5,089
Saunders	5,085
Godson & Son	5,071
Mowlem & Co.	5,003
Patman & Fotheringham	4,800
Nightingale	4,988
Sole & Son	4,965
Leslie & Co.	4,961
Shillitoe	4,950
Hadley & Co.	4,902
M. Hughes	4,890
Galbraith Brothers	4,841
Cowley & Drake	4,802
Gaze & Sons, Kingston	4,767
J. Dorey & Co.	4,734
Ferguson & Co.	4,733
A. & B. Hanson	4,713
C. G. Hill	4,700
Wisdom Brothers	4,700
Chamberlain	4,673

London, E.C.—For the erection of the superstructure of a new police-court at Clerkenwell. Mr. J. Dixon Butler, architect, surveyor to the Metropolitan Police, New Scotland Yard. Quantities by Messrs. Thurgood, Son & Chidgey, Charing Cross Chambers, Duke Street, Adelphi:—

Poster & Dicksee	£29,435
Lascelles & Co.	28,945
Holloway Brothers	27,841
Higgs & Hill	27,400
Lathey Brothers	27,190
F. & H. F. Higgs	27,154
G. H. Minter	26,992
Mowlem & Co., Ltd.	26,884
Colls & Son	26,754
Grover & Son	26,718
Holliday & Greenwood	26,563
H. Lovatt	26,415
Greenwood, Ltd.	26,225
Asby & Horner	26,105
Lawrance & Son	25,979

London, S.E.—For the superstructure of Union Street parcel office, for H.M. Office of Works, &c.:—

F. G. Enness	£55,977
J. Appleby & Sons	54,200
T. P. Trinton	50,185
J. Shillitoe & Son	48,650
Perry & Co.	48,000
W. Pattinson & Sons	47,579
S. E. Moss & Co.	47,500
C. Ansell	47,247
Hockley & Co.	47,035
J. Parsons	47,000
Higgs & Hill, Ltd.	46,884
Poster & Dicksee	46,789
Leslie & Co., Ltd.	46,585
Spencer, Santo & Co., Ltd.	45,997
E. Lawrence & Sons	45,947
Hibberd Brothers, Ltd.	45,920
Wilkinson Brothers	45,723
H. Lovatt	45,700
J. Dorey & Co., Ltd.	45,300
W. Downs	44,697
Edwards & Medway	44,363
J. Mowlem & Co., Ltd.	43,967

W. Johnson & Co., Ltd.	£43,672
W. H. Lorden & Son	43,521
Johnson & Co.	43,335
F. & H. Higgs	43,280
Patman & Fotheringham, Ltd.	42,989
B. E. Nightingale	42,636
J. Smith & Sons, Ltd.	40,950

London, S.E.—For the construction of a new river wall and the foundations of a chimney shaft at the proposed power station, Old Barge House Wharf, Blackfriars, S.E., for the Commissioners of H.M. Works and Public Buildings:—

A. G. Osenton	£7,673	0	0
T. E. Pedrette	5,959	0	0
Foster & Dicksee	5,885	0	0
Perry & Co.	5,492	0	0
B. E. Nightingale	5,000	0	0
S. Kavanagh & Co.	4,743	0	0
F. S. Minter	4,454	0	0
Johnson & Co.	4,450	0	0
W. H. Lorden & Son	4,444	0	0
M. Dinnie	4,216	11	0
J. T. Firbank, Ltd.	4,065	0	0
Pethick Brothers	3,987	0	0
A. Fasey & Son	3,887	2	4
C. Ansell	3,838	0	0
R. H. B. Neal	3,835	0	0
F. Miskin	3,800	0	0
Case Sea Defence Syndicate, Ltd.	3,800	0	0
H. Lovatt	3,763	14	3
E. Good & Sons, Ltd.	3,752	16	2
J. Sangwin	3,499	14	3
J. Mowlem & Co., Ltd.	3,419	0	0
J. A. Ewart	3,140	0	0

A.—Credit only materials.

London, N.—For the erection of a granary and stables, Broad Lane, Tottenham, N., for Mr. W. H. Clench. Mr. Augustine C. Green, architect, 111, Fore Street, Edmonton, and 40, Bruce Castle Road, Tottenham:—

W. Eason	£3,281
J. Stewart	2,431
F. Bull	2,168
Green & Smith	2,120
A. Fairhead & Son	2,056
Mattock Brothers	1,997
T. Almond & Son	1,995
J. Groves	1,904
H. Knight & Son	1,867
A. Porter	1,847

* Accepted.

Mortlake.—For the erection of new stabling and workshops, &c., and alterations and additions to the adjoining fire-station, High Street, for the Barnes U.D.C. Mr. G. Bruce Tomes, A.M.I.C.E., surveyor:—

Ford & Walton, Ltd., Kilburn	£4,955
H. Blackburn, London, W.	4,900
P. Dockerill, Putney	4,698
T. Pearce, Thornton Heath	4,612
Williams & Sons, Clapham Junction	4,570
A. Leather, Wandsworth	4,461
Cropley Brothers, Epsom	4,420
T. Bendon, Hammersmith	4,217
Hughes & Co., Mortlake	4,196
F. W. Dunkley, Barnes	4,171
W. J. Renshaw, Putney	4,143
Foster Brothers, Norwood Junction	4,056
Bailey & Fry, Strand-on-Green	4,050
Sole & Sons, Richmond	4,010
A. Hunt & Sons, 12, Archway Street, Barnes	3,922

* Accepted.

Southampton.—For the erection of the new Portswood schools and other works appurtenant thereto, for the Education Committee:—

Golding & Ansell	£18,000
S. Solter, Southsea	17,518
W. Jupe	17,361
Musselwhite & Sapp, Basingstoke	17,350
Exors. of late W. Franklin	17,280
Rashley & Son	17,187
J. Nichol	16,379
Stevens & Co.	16,353
Playfair & Toole	15,962
Jenkins & Sons	15,874
Dyer & Son	15,720

* Accepted. [Rest of Southampton.]

Sydenham.—For the erection of consulting-room, surgery, &c., as an addition to "Rydal Mount," Longton Grove, together with re-decorations throughout. Mr. George Pratt, architect and surveyor, Railway Approach, Sydenham, S.E.:—

S. G. Waters	£299
J. M. Stewart	288
G. Kemp	245

* Accepted.

New Companies.

CHAFEN & NEWMAN, LTD., builders, contractors and engineers, &c., 95, Trundle Road, Deptford, S.E. Capital: £11,000 in £1 shares.

CARN BREA QUARRIES, LTD., marble and stone merchants, masons, &c., 80, Lombard Street, E.C. Capital: £30,000 in £1 shares.

G. & D. MUSGRAVE, LTD., manufacturers of enamelled, fireclay or earthenware goods, sanitary drain pipes, and similar articles, Pearl Brook Works, Mason, Horwicks, Lancashire. Capital: £25,000 in £1 shares.

LEE & EASTWOOD, LTD., makers of bricks, cement, lime, &c., Wellington Wharf, Belvedere Road, Lambeth. Capital: £50,000 in £1 shares. This is an amalgamation of the businesses of Eastwood & Co., Ltd., and William Lee, Sons & Co., Ltd. The number of directors is to be not less than five nor more than fifteen; three to be nominated by Messrs. Eastwood and two by Messrs. Lee.

Complete List of Contracis Open.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
BUILDING:			
Jan. 28	Belfast—Synagogue	—	Young & Mackenzie, Scottish Provident Buildings, Belfast.
" 28	Belturbet, Ireland—Post Office	—	W. H. Stephens & Son, 13 Donegal Square, North Belfast.
" 28	Leamington Spa—Sanitary Convenience	Corporation	L. Rawlinson, Town Clerk, Town Hall, Leamington Spa.
" 28	Elland, Yorks—Additions to School	—	F. F. Beaumont, Architect, Southgate Chambers, Halifax.
" 28	London, S.E.—Lime and Cement	Lambeth Borough Council	H. Edwards, 346 Kennington Road, S.E.
" 28	London—Firebricks	Great Indian Peninsula Rly. Co.	Secretary, 48 Copthall Avenue, E.C.
" 28	Padstow, Cornwall—Hall and Additions to Wesleyan Church	—	J. Ennor & Son, Architects, Newquay.
" 28	Gorse Hill—School	Stretford Education Authority	F. H. Mee, 32 Victoria Street, Manchester.
" 29	Llanfarian, Wales—House	T. E. Owen	J. L. Evans, 21 Great Dargate Street, Aberystwyth.
" 29	Banbridge, co. Down, Ireland—Bank Office	Ulster Bank, Ltd.	W. H. Stephens & Son, 13 Donegal Square, North Belfast.
" 30	Carrickfergus, Ireland—Altering Shed	Urban District Council	J. Boyd, Clerk, Town Hall, Carrickfergus.
" 30	Great Yarmouth—Two Houses	F. Allen	C. G. Baker, Architect, Town Hall Chambers, Great Yarmouth.
" 30	Hayle, Cornwall—Church	—	O. Caldwell, Architect, Penzance.
" 30	Newport, Pembrokeshire—House, &c.	—	W. Davies, The Cross House, Newport Pembrokeshire.
Feb. 30	Halifax—Additions to West Mount Ironworks	Corporation	C. T. L. Horstall & Son, Architects, Lord St. Chambers Halifax.
" 1	Sunderland—Additions, &c., to Hall	Urban District Council	J. Eltringham, 62 John Street, Sunderland.
" 1	Birr—Eight Labourers' Dwellings	Urban District Council	H. Browne, Town Surveyor, Town Hall, Birr.
" 1	Swindon—Wall	—	Society's Office, 54 Radnor Street, Swindon.
" 1	Paddington, W.—Power House and Chimney Shaft	London County Council	Architect's Department (General Construction Section), 15 Pall Mall East, S.W.
" 1	Bristol—Warehouse	Lindrea & Co., Ltd.	H. J. Jones & Son, 12 Bridge Street, Bristol.
" 1	Cliffe, Kent—Fire Station	Parish Council	F. E. Rogers, Clerk, Town Hall, Cliffe, Kent.
" 1	Cork—Additions, &c.	—	W. H. Hill & Son, 28 South Mall, Cork.
" 1	Mallow, Ireland—Sixteen Dwellings	Urban District Council	B. E. F. Sheehy, 57 George Street, Limerick.
" 1	Mansfield—Coal Store, &c.	Corporation	A. Graham, Water Manager, Gasworks, Mansfield.
" 1	Pontypool—Covered Playgrounds, &c.	Trevelin School Board	Lansdowne & Griggs, Architects, Newport, Mon.
" 1	Whitchurch, near Cardiff—Library	—	R. & S. Williams, Architects, Borough Chambers, Wharton Street, Cardiff.
" 1	Winston, Darlington—Rubble Wall to Churchyard	—	E. Hardy, Winston, Darlington.
" 1	Harrogate—Free Library	Corporation	H. T. Hare, 13 Hart Street, Bloomsbury Square, W.C.
" 2	Canterbury—Salesman's Office	Markets Committee	A. C. Turley, City Surveyor, Guildhall Street, Canterbury.
" 2	Herne Bay—Enlarging Lavatory, &c.	Urban District Council	F. W. J. Palmer, Surveyor, Town Hall, Herne Bay.
" 2	Stockton-on-Tees—School	—	C. J. Archer, 77 High Street, Stockton-on-Tees.
" 3	Cranwell, near Sleaford, Lincs—Church Restoration	—	G. R. Boreham, 24 John Street, Sunderland.
" 3	London, S.E.—Lime, Cement and Bricks	Borough Council	J. A. Johnson, Town Clerk, Town Hall, Walworth Road, S.E.
" 4	Bethnal Green, E.—Stabling and Disinfecting Station	Guardians	R. Voss, junr., Town Clerk, Town Hall, Bethnal Green, E.
" 4	Barnstaple—Alterations and Additions to Workhouse	Trustees	W. C. Oliver, Architect, Barnstaple.
" 5	Halifax—School	Urban District Council	A. G. Dalzell, 15 Commercial Street, Halifax.
" 6	Egremont, Cheshire—Cement	—	W. H. Travers, District Surveyor, Public Offices, Egremont, Cheshire.
" 6	Boscastle—Renovation of Church	—	V. O. Smith, Secretary, Post Office, Boscastle.
" 8	Alnwick—Rebuilding Bridge	Rural District Council	H. W. Walton, Clerk, Alnwick.
" 8	Kingston-upon-Thames—Alteration to Engine-room	Guardians	W. H. Hope, Architect, Seymour Road, Hampton Wick.
" 8	Dartford—Ward, Laundry, &c.	Joint Hospital Committee	R. Marchant, 28 Theobalds Road, London, W.C.
" 9	Holywell, Flint—Alterations, &c., to Chapel	Guardians	T. G. Williams, 52 South Castle Street, Liverpool.
" 9	Halsham—Alterations, &c., to Workhouse	—	Mitchell & Ford, 7 Gildredge Road, Eastbourne.
" 10	Saintfield, co. Down—Residence and Business Premises	Borough Council	Hobart & Heron, Architects, Dromore, co. Down.
" 11	West Ham—Slates, Lime, Cement, &c.	—	Borough Engineer, Town Hall, Stratford, E.
" 12	St. Leonard's, Sussex—Coastguard Station	Director of Works Dept., Admiralty, 21 Northumberland Avenue, W.C.	
" 17	Chiswick—Public Baths	Urban District Council	J. Barclay, Surveyor, Town Hall, Chiswick.
" 17	Folkestone—Cement	Corporation	A. E. Nichols, Borough Surveyor, Corporation Offices, Folkestone.
" 20	Plymouth—Cement	Corporation	J. Paton, Borough Surveyor, Municipal Offices, Plymouth.
" 22	Runcorn—Hospital	Rural District Council	G. E. Bolshaw, 189 Lord Street, Southport.
" 25	Stradbroke, Suffolk—Police Station	East Suffolk County Council	H. Miller, 16 Museum Street, Ipswich.
" 27	Narborough, near Leicester—Asylum	—	Everard & Pick, Architects, Millstone Lane, Leicester.
March 1	Tottenham—Offices and Fire Station	Urban District Council	W. H. Prescott, 712 High Road, Tottenham.
ENGINEERING:			
Jan. 28	Oldbury—Pumping Station	Urban District Council	J. T. Eayrs, 39 Corporation Street, Birmingham.
" 29	Hull—River Walls, &c.	Corporation	A. E. White, City Engineer, Town Hall, Hull.
" 30	Devonport—Gasworks	Corporation	Stevenson & Burstal, 38 Parliament Street, Westminster.
" 30	Liskeard, Cornwall—Bridges, &c.	County Council	S. W. Jenkin, County Surveyor, Liskeard.
" 31	Redcar—Promenade Extension	Urban District Council	J. Howcroft, Surveyor, 2 West Terrace, Redcar.
" 31	Cestona, Spain—Waterworks	Syndic	Casa Consistorial, Cestona.
" 31	Palermo—Steam Flour Mill, &c.	—	Commercial Intelligence Branch, Board of Trade, 50 Parliament Street, S.W.
Feb. 1	Cairo—Three Road Bridges over Nile	Ministry of Public Works	Commercial Intelligence Branch, Board of Trade, 50 Parliament Street, S.W.
" 1	Keighley—Regenerative Furnaces	Gas Committee	J. Laycock, Engineer, Gas Offices, Cook Lane, Keighley.
" 1	Plymouth—Wharf	Town Council	Sir J. W. Barry & Partners, 21 Delahay Street, Westminster.
" 1	Portknockie, Banff, Scotland—Waterworks	District Committee	J. Grant, 23 Castle Street, Banff.
" 2	Leyton—Electric Wiring and Hot-water Heating	Urban District Council	W. Jacques, 2 Finchchurch Street, E.C.
" 3	Madrid—Bridge	—	Commercial Intelligence Branch, B. of Trade, 50 Parliament St., S.W.
" 3	Warrington—Steam Crane, &c.	Gas Committee	W. S. Haddock, Engineer, Gasworks, Warrington.
" 4	Salford—Retort Smoking Machinery, &c.	Gas Committee	W. W. Woodward, Engineer, Gas Offices, Bloom Street, Salford.
" 4	Abergavenny—Regenerative Retorts	Gas Committee	H. Russell, Gasworks, Abergavenny.
" 8	London, N.—Electric Plant	Hornsey U.D.C.	R. Hammond, 64 Victoria Street, Westminster, S.W.
" 11	West Ham—Electrical Stores	Borough Council	Boro' Engrn., Centr. Electricity Station, Abbey Mills, West Ham.
" 15	Bristol—Swingbridge	Docks Committee	W. W. Squire, Engrn., Engineer's Office, Cumberland Rd., Bristol.
" 15	Bristol—Caisson	Docks Committee	W. W. Squire, Engrn., Engineer's Office, Cumberland Rd., Bristol.
" 15	Bristol—Lock Gates	Docks Committee	W. W. Squire, Engrn., Engineer's Office, Cumberland Rd., Bristol.
Mar. 17	Christchurch, New Zealand—Electrical Tramways	—	Agent-General for New Zealand, Victoria Street, London.
FURNITURE:			
Jan. 31	Bristol—Bedsteads, &c.	Health Committee	General Medical Superintendent, 47 Prince Street, Bristol.
Feb. 6	Plymouth—Desks, &c.	Education Authority	E. C. Cook, 18 Princess Square, Plymouth.
IRON AND STEEL:			
Jan. 28	London, S.E.—Ironmongery, Tools, &c.	Lambeth Borough Council	H. Edwards, 346 Kennington Road, S.E.
" 28	London, E.C.—Iron and Steel	Gt. Indian Peninsula Rly. Co.	Secretary, 48 Copthall Avenue, E.C.
Feb. 3	London, S.E.—Tools, Steel and Iron	Urban District Council	J. A. Johnson, Town Clerk, Town Hall, Walworth Road, S.E.
" 3	East Dereham, Norfolk—Pipes	Borough Council	Surveyor, Theatre Street, East Dereham.
" 11	West Ham—Ironmongery, &c.	Corporation	Borough Engineer, Town Hall, Stratford, E.
" 17	Folkestone—Iron and Ironmongery	Corporation	A. E. Nichols, Borough Surveyor, Corporation Offices, Folkestone.
" 20	Plymouth—Iron, Steel, Bolts and Nuts, &c.	Corporation	J. Paton, Borough Surveyor, Municipal Offices, Plymouth.
PAINTING AND PLUMBING:			
Jan. 28	London, S.E.—Brushes, Oil and Colours	Lambeth Borough Council	H. Edwards, 346 Kennington Road, S.E.
Feb. 3	Southend-on-Sea—Painting	Corporation	E. J. Elford, Borough Engineer, Southend.
" 8	Manchester—Painting	Lancs & Yorks Railway Co.	Engineer's Office, Hunt's Bank, Manchester.
" 11	West Ham—Oils, Colours, Brushes, &c.	Borough Council	Borough Engineer, Town Hall, Stratford, E.
" 17	Folkestone—Paint, Varnish, Glass, &c.	Corporation	A. E. Nichols, Borough Surveyor, Corporation Offices, Folkestone.
" 20	Plymouth—Paint, Glass, &c.	Corporation	J. Paton, Borough Surveyor, Municipal Offices, Plymouth.
" 25	Mickleover, Derby—Painting	County Asylum Committee	Mr. McWilliams, Engineer, County Asylum, Derby.
ROADS AND CARTAGE:			
Jan. 28	London, S.E.—Granite Paving Setts	Lambeth Borough Council	H. Edwards, 346 Kennington Road, S.E.
" 28	Boston, Lincs—Materials	Lincs County Council	H. C. Johnson, Clerk, County Council, Sessions House, Boston.
" 29	West Didsbury, Lancs—Road Works	Withington U.D.C.	A. H. Mountain, Surveyor, Town Hall, West Didsbury.
" 29	Spilsby, Lincs—Materials	Rural District Council	T. A. Busbridge, District Surveyor, Spilsby.
" 29	Richmond, Surrey—Street Works	Town Council	J. H. Brierley, Borough Surveyor, Town Hall, Richmond.

Complete List of Contracts Open — *continued.*

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
ROADS AND CARTAGE—<i>cont.</i>			
Jan. 30	Bicester, Oxon.—Highway Repairs	Rural District Council	J. W. Tubb, Highway Surveyor, Fewcott, Bicester.
" 30	Bicester, Oxon.—Stone and Chippings	Rural District Council	J. W. Tubb, Highway Surveyor, Fewcott, Bicester.
" 30	Norwich—Granite	Norfolk County Council	T. H. B. Heslop, County Surveyor, Norwich.
Feb. 30	Norwich—Materials	Norfolk County Council	T. H. B. Heslop, County Surveyor, Norwich.
" 1	Norwich—Grit	Corporation	A. E. Collins, City Engineer, Guildhall, Norwich.
" 1	Grimsby—Road Materials, &c.	Corporation	W. G. Whyatt, Borough Surveyor, Town Hall, Grimsby.
" 1	Southwick, Sussex—Private Street Works	Urban District Council	G. W. Warr, Surveyor, Council Offices, Southwick.
" 2	Haslingden, Lancs.—Road	Guardians	J. K. Hay, Clerk, Union Offices, Pike Law, near Rawtenstall.
" 2	Chingford—Making-up, Paving, &c.	Urban District Council	H. Bird, 14 The Parade, Chingford.
" 2	Leyton—Road Materials, &c.	Urban District Council	W. Dawson, Surveyor, Town Hall, Leyton.
" 2	Teddington—Making-up	Urban District Council	M. Hainsworth, Surveyor, Teddington.
" 3	London, S.E.—Granite	Urban District Council	J. A. Johnson, Town Clerk, Town Hall, Walworth Road, S.E.
" 3	Kettering—Granite	Rural District Council	C. W. Lane, Clerk, Kettering.
" 4	Isle of Ely—Materials	County Council	H. F. Simpson, County Surveyor, Northern Division, Wisbech.
" 4	Southend-on-Sea—Wood Paving	Corporation	E. J. Elford, Borough Engineer, Southend.
" 6	Egremont, Cheshire—Granite Chippings	Wallasey U.D.C.	W. H. Travers, Dist. Surveyor, Public Offices, Egremont, Cheshire.
" 6	Chelmsford—Materials	Essex C.C.	P. J. Sheldon, Chief Surveyor, Chelmsford.
" 6	Haslemere, Surrey—Making-up	Hambledon R.D.C.	F. Smallpiece, 138 High Street, Guildford.
" 8	Hinckley—Materials	Urban District Council	E. H. Crump, Surveyor, Town Hall, Hinckley.
" 11	West Ham—Paving Materials	Borough Council	Borough Engineer, Central Elec. Sta., Abbey Mills, West Ham, E.
" 15	Essex—Broken Granite	County Council	P. J. Sheldon, Chief Surveyor, Chelmsford.
" 17	Folkestone—Granite Kerb and Channel	Corporation	A. E. Nichols, Borough Surveyor, Corporation Offices, Folkestone.
SANITARY:			
Jan. 28	Wokingham—Sewers	Town Council	C. W. Marks, Borough Surveyor, Town Hall, Wokingham.
" 29	Middlesbrough—Sewer	Urban District Council	F. Baker, Borough Engineer, Middlesbrough.
" 29	Brentwood, Essex—Diversion of Sewer	Urban District Council	J. E. Fothergill, Surveyor, Town Hall, Brentwood.
" 30	Melksham—Sewerage and Sewage-disposal Works	Urban District Council	A. G. Smith, Clerk, Melksham.
" 30	Cheriton, Kent—Removal of Refuse	Urban District Council	A. Atkinson, Clerk, Public Offices, Cheriton, Kent.
Feb. 1	Banff, Scotland—Water and Drainage Works	District Committee	J. Grant, 23 Castle Street, Banff.
" 1	Camberley, Surrey—Sewers, &c.	Frimley U.D.C.	F. C. Uren, Surveyor, High Street, Camberley.
" 2	London, W.—Conveniences, &c.	Acton District Council	D. J. Ebbetts, Surveyor, 212 High Street, Acton.
" 3	Dorking—Sewerage Works	Rural District Council	W. Rapley, jr., Surveyor, Clovelly, Tower Hill, Dorking.
" 10	Horsham—Sewerage Works	Urban District Council	W. H. Travers, Dist. Surveyor, Public Offices, Egremont, Cheshire.
" 11	West Ham—Stoneware Pipes, Disinfectants, &c.	Borough Council	S. Mitchell, Clerk, Market Square, Horsham.
" 20	Plymouth—Sanitary Fluid	Corporation	Borough Engineer, Town Hall, Stratford, E.
TIMBER:			
Feb. 3	London, S.E.—Timber	Lambeth Borough Council	J. A. Johnson, Town Clerk, Town Hall, Walworth Road, S.E.
" 4	London, S.E.—Timber	Borough Council	H. Edwards, 346 Kennington Road, S.E.
" 11	West Ham—Timber	Borough Council	Borough Engineer, Town Hall, Stratford, E.
" 17	Folkestone—Timber	Corporation	A. E. Nichols, Borough Surveyor, Corporation Offices, Folkestone.

List of Competitions Open.

DATE OF DELIVERY.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	DEPOSIT REQUIRED FOR CONDITIONS, &c.	BY WHOM ADVERTISED.
Jan. 31	Borstal, Rochester—Chancel, Organ Chamber, &c.	—	—	Borstal Vicarage, Rochester.
Feb. 1	Erdington—New Council House & Free Library ..	£50, £30, £20.	£1 IS.	H. H. Humphries, District Engineer, Public Hall, Erdington. Birmingham.
" 1	Sevenoaks—Public Library	—	—	H. J. Thompson, Clerk, Council Offices, Argyle Road, Sevenoaks.
" 1	Hitchin—Hospital	£10 each.	—	A. E. Passingham, Clerk, Union Offices, Hitchin, Herts.
" 2	Greenock—Hospital	—	—	C. MacCulloch, Town Clerk, Municipal Buildings, Greenock.
" 20	Bangor—Workmen's Houses	£21, £10 10s.	—	J. Gill, City Surveyor, Bangor.
Mar. 1	Ilkley—Free Library, &c.	£100, £50, £20.	£1 IS.	F. Hall, Clerk, Council Offices, Ilkley.
" 31	Vienna—Machinery to Lift Boats on Canal ..	100,000, 75,000 & 50,000 kronen.	—	Austro-Hungarian Consulate-General, 22 Laurence Pountney Lane, E.C.
April 30	Newcastle-upon-Tyne—Grammar School	£100, £50, £25.	£1 IS.	H. J. Criddle, 2 Collingwood Street, Newcastle-upon-Tyne.
" No date	Torquay—Public Library	£52 10s., £31 10s.	—	F. S. Hex, Town Clerk, Town Hall, Torquay.
" "	Haverfordwest—Meat Market	£2,000	—	R. T. P. Williams, Town Clerk, Haverfordwest.

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Advertising Notes.

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ADVERTISER: 45, F.R.I.B.A., late Executive Engineer, Public Works. Home and Colonial experience. Accept nominal salary to resume home work.—A., 21, Nemours Road, Acton.

AN ARCHITECT has TIME to ASSIST others with Working Drawings, Details, and Perspectives at own office. Special terms for Competitions. Good general experience.—Apply, H. L. FREDDEN, 11, Hart Street, Bloomsbury.

ARCHITECT and SURVEYOR'S Assistant desires engagement. Associate of Sanitary Inst. (by examination). Nine years' varied experience; measuring up, contract drawings, details, specifications, quantities, surveying and levelling.—H., 10, Rollscourt Avenue, Herne Hill, S.E.

ARCHITECT & SURVEYOR'S Assistant desires Engagement, 9 years' experience in general and detail drawings, specifications, quantities, surveying, &c. Excellent testimonials.—Write, ASSISTANT, Geeston House, Ketton, Stamford.

ARCHITECT'S and SURVEYOR'S ASSISTANT (22), requires situation. Six years. Capable all duties, working drawings, details, specifications, quantities, levelling and field surveying, &c. Salary, 25s.—Box 167, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

ARCHITECT'S and SURVEYOR'S ASSISTANT desires Re engagement; six years' London and country practical experience; designs, working drawings, specifications, &c., and surveying; excellent testimonials.—C. D., 30, Beaumont Street, W.

ARCHITECT'S and SURVEYOR'S JUNIOR ASSISTANT desires Engagement, 4½ years' experience. Working drawings, details, surveying, &c.—G., 33, Bickerton Road, Highgate, N.

ARCHITECT'S and SURVEYOR'S JUNIOR ASSISTANT desires engagement. Good experience of first-class work, church and domestic. Details, measuring up and surveying.—Box 140, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

ARCHITECT'S ASSISTANT desires appointment in London or district. Five years' experience. Working and detail drawings, surveying, &c. Salary a secondary consideration.—Apply N. T., 38, Dover Street, Hull.

ARCHITECT'S ASSISTANT, thoroughly experienced in Construction and Design, including steelwork; can take off quantities, measure up, &c. Specifications.—Box 135, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

ARCHITECT'S ASSISTANT, good experience, requires engagement, contract drawings, details, surveying, assistance with quantities, &c.—Box 149, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

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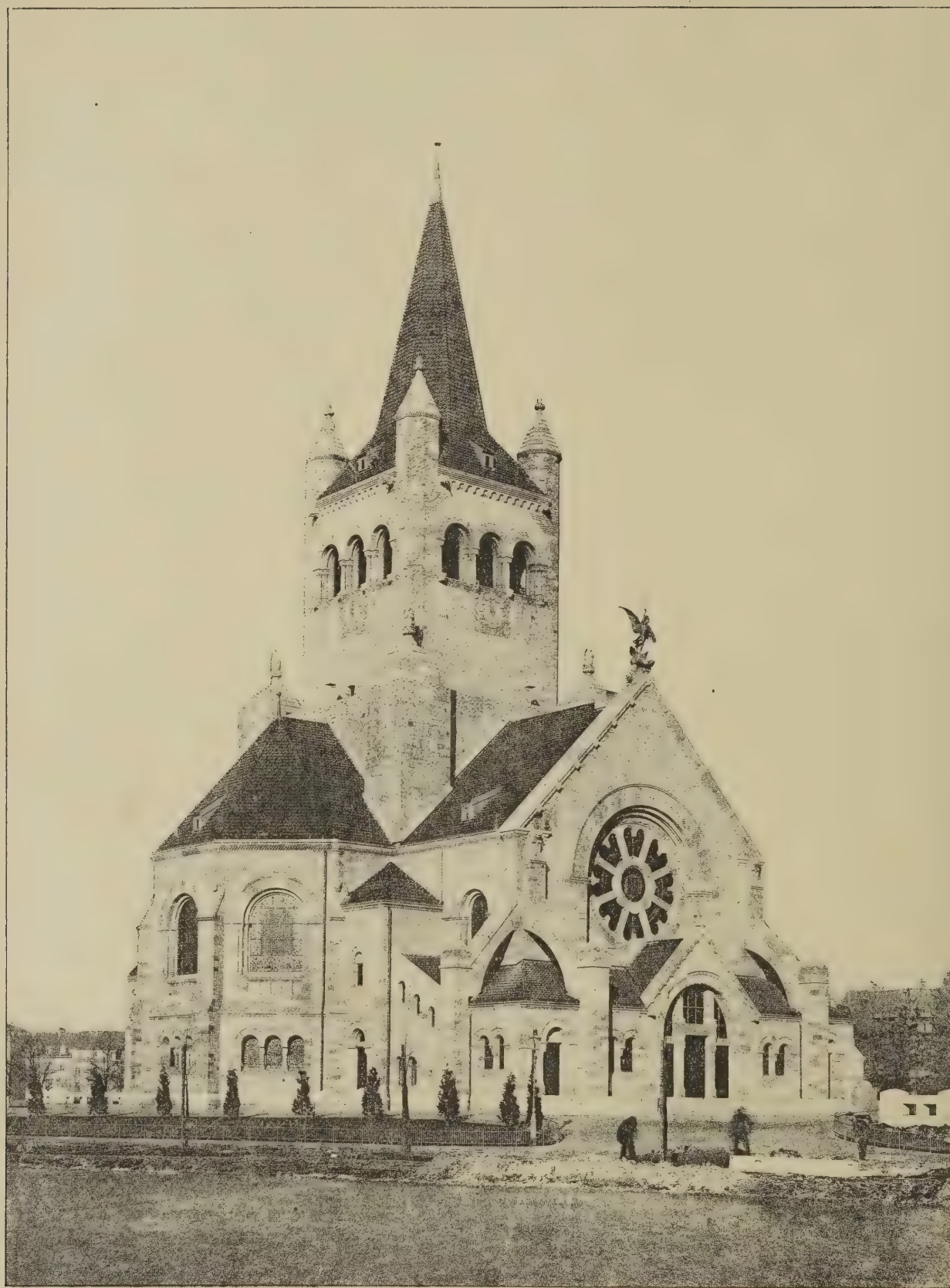
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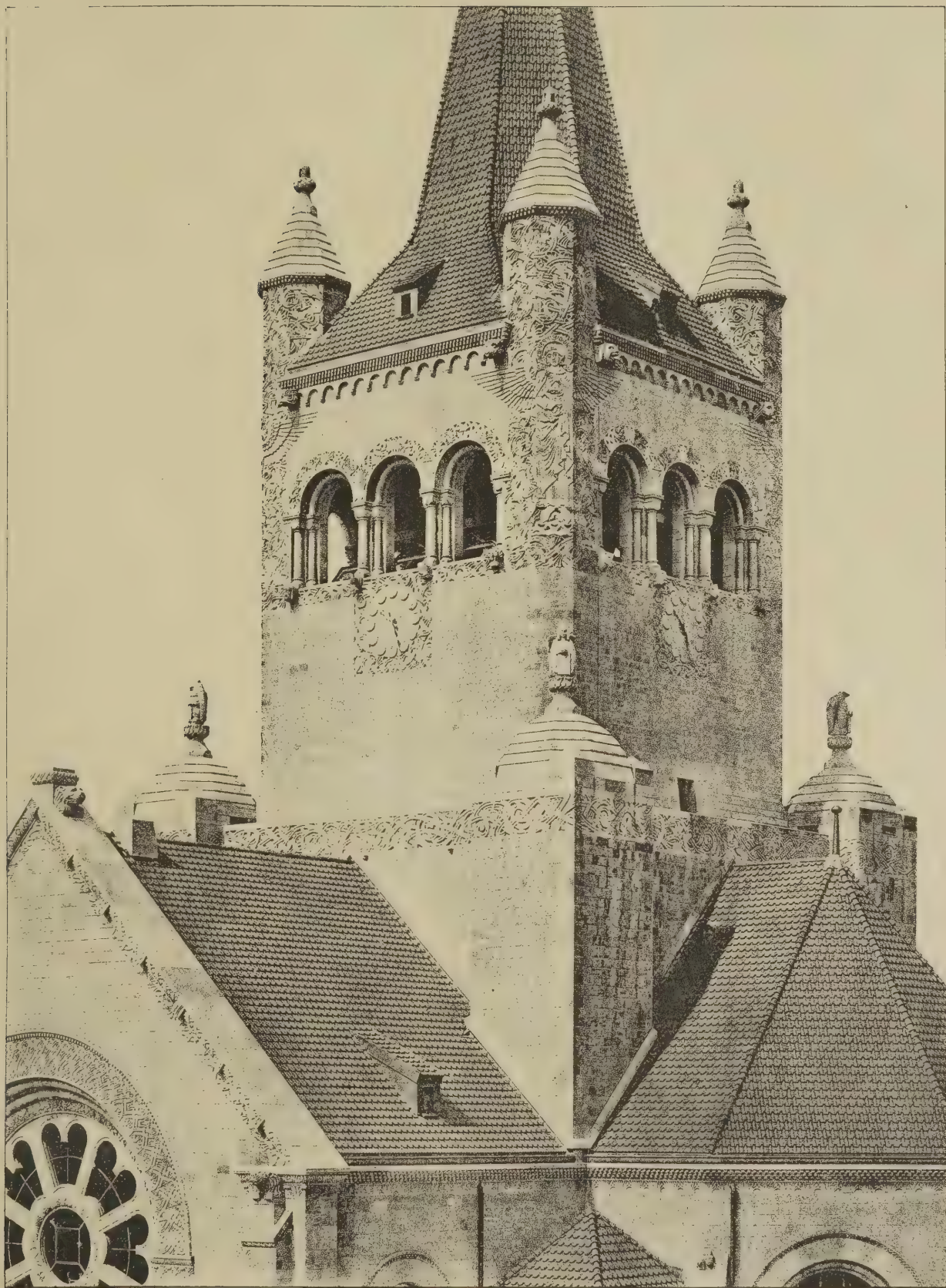
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CURJEL & MOSER, ARCHITECTS.

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THE BUILDERS' JOURNAL

AND ARCHITECTURAL RECORD.

February 3, 1904. Vol. 19, No. 469.

6, Great New Street, Fetter Lane, E.C.

Summary.

The Royal Gold Medal is to be awarded to M. Choisy, of Paris. (Page 55.)

In criticizing the Institute competition drawings Mr. J. S. Gibson said that one did not need to be a Ruskin in order to obtain the Essay Medal, though literary style and finish were no doubt essential; and to those who were ambitious there was an incentive in knowing that Thomas Hardy had been the prize essayist in 1862. (Page 55.)

Two important reports by Professor Church on his treatment of the stonework at the Chapter House of Westminster Abbey were issued last week as a Parliamentary paper. Baryta-water was employed. As preliminary trials in 1900 appeared wholly successful after the lapse of a year, four bays of the Chapter House were treated in the summer of 1901 and the remaining four last year. The whole surface was treated nine times, 1 gal. of the solution being found sufficient for 21yds. super. on the first spraying and for 21 to 26yds. in the subsequent sprayings and paintings. Baryta-water penetrates deeply into the stone and hardens it. (Page 51.)

The new church of St. Paul at Basle is interesting as showing the trend of the modern school of church architects abroad—more especially in Germany. The stone is very richly carved in places, the motives generally being based on Celtic and Romanesque types. (Page 50.)

In his presidential address to the Institute of Sanitary Engineers, Mr. William H. Maxwell, A.M.I.C.E., said that public sanitation was almost unknown a century ago, and little or no progress was made prior to the appointment of the "Health of Towns Commission" in 1843. The annual flow of London's sewage represented a canal 24ft. wide and 9ft. deep running day and night at a rate of 2ft. per second—or equivalent to a lake 44 sq. miles in area and 11½ft. in depth. Of the several systems of sewage-disposal, the bacteriological was the only satisfactory one. (Page 56.)

The statue of James II., formerly in Whitehall, has been erected at the western face of the Admiralty. (Page 58.)

Reports from different parts of the country show that employment in the building trades is very slack. Great depression prevails at Walthamstow. (Pages 56 and 57.)

It is claimed that Hull is becoming, if it has not already become, the best paved city in the Kingdom. (Page 57.)

Mr. Frank Brangwyn, one of the five new A.R.As., was born at Bruges, where his father, an architect, had set up a tapestry establishment. He was brought to England at an early age, and entered the designing-rooms of William Morris & Co. He is at present engaged on a large scheme for the Skinners' Hall and a fresco for the Royal Exchange. (Page 54.)

A Case for Protection. No. 36, Sunderland Terrace, Ulverston, is undoubtedly a dangerous building under the Act for Upholding the Dignified and Non-Advertising Profession of Architecture: and, possibly, some of the architectural associations who are just now making an onslaught on the borough surveyor for stealing their bread-and-butter (over and above the £10,000) will lodge a protest against the "lady architect" who lives in this building. We base our statements on no idle rumour. Our authority is here in black and white, from the advertisement columns of the "Daily Graphic," where the lady architect expresses her desire for commissions. "Quaint original designs" are spoken of: and we have a lurking suspicion of many things, strange and fearful, with a *souçon* of "a handy wardrobe out of two orange-boxes and a bottle of oak-stain-varnish." But this lady architect, like many more of us, is a specialist, her particular study being "bachelors' wee country retreats"—the embodiment, presumably, of some kind of folding dining-room, kitchen and boot cupboard, packed in box, carriage paid. Surely here is sufficient argument for protection.

The Society of British Sculptors. THOUGH architects and painters might associate in their own societies, our sculptors have hitherto had to be content with a fractional share in some mixed organization and a fattering recognition (which they do not much like) from the Academy. British sculpture is too much alive for such representation, and we have consequently to record the inception of a new society—The Society of British Sculptors. The first active steps were taken last December, when a meeting was called to ascertain the feeling of a large number of sculptors in regard to the matter. Mr. Frampton, R.A., presided. The meeting was unanimously in favour of the proposal, and appointed a provisional committee—consisting of the chairman and Messrs. T. Stirling Lee, W. S. Frith, W. Reynolds-Stephens, D. McGill, F. Derwent Wood and F. Lynn Jenkins—to confer together and prepare a scheme. A general meeting took place on January 11th—Mr. Thomas Brock, R.A., Sir Charles Lawes-Wittewronge, Mr. George Simonds, Mr. Frampton, Mr. Goscombe John, Mr. Pomeroy, Mr. Alfred Drury, Mr. Henry Pegram, Mr. John Tweed, Mr. Bertram Mackennal, Mr. A. G. Walker, Mr. Montford, Mr. F. Bowcher and the members of the provisional committee being among those present—which meeting unanimously voted its confidence in the committee

and Mr. Brock forming the nucleus of the Society. Sir Charles Lawes-Wittewronge was nominated hon. treasurer and Mr. Lynn Jenkins hon. secretary. Mr. Thomas Brock said it had been his wish for many years that the art of sculpture should have some representative society, and went on to explain how such a society could be constituted. He insisted that sculptors should combine without clique for the sole object of the advancement of their art, which had hitherto suffered by being inadequately presented, and that the Society should be in no sense regarded as antagonistic to any existing institution. He pointed out that it would be necessary to have an endowment fund, and invited donations from artists and those interested in the advancement of the art of sculpture. The Society has our entire support and we wish it a success as distinguished as that which its leading members have won for themselves.

Asbestos Ceilings. IT was reported from New York last week how the asbestos ceilings in a tenement house checked the spread of a fire and enabled thirteen families to escape on to the roof. The report added that the use of asbestos in the construction of the house was an experimental measure, "but its worth was so manifestly proved that it has been suggested that the municipality should pass an ordinance compelling all houses in the future to have similarly-made ceilings." For our own part we fail to see that such ceilings would be so remarkably excellent. Lath-and-plaster ceilings undoubtedly succumb very soon under a fierce fire, but a ceiling formed with asbestos sheets does not seem to offer much advantage, for asbestos will get red-hot, and unless the sheets were fairly thick the protection would be no better than plaster. We must say, however, that metal lathing and plaster forms an admirable protection, and is much used for casing stanchions and joists. The most fire-resisting floor one could build would be a brick arched one, then perhaps a floor of hardwood beams or baulks, then a concrete floor or one of the several patented forms of hollow lintel construction. For all ordinary purposes the brick floor is out of the question and the solid wood floor too costly, while the concrete or similar floor is the most convenient of all, and we cannot see that any application of asbestos to such a floor would be more satisfactory than plaster if it were only the same thickness; but asbestos or slag wool and plaster slabs 2in. or 3in. thick are certainly effective, and slag wool filled in between joists is advocated by many.

ST. PAUL'S CHURCH, BASLE.

THE new church of St. Paul at Basle, in Switzerland, is the outcome of a competition held in the Spring of 1898 by the Department of Building. The programme offered a fine site on the axis of the viaduct, which, being polygonal, called for concentration in the plan, while by reason of the long axis of the Bahnhofplatz-Pauluskirche great massiveness in the design was demanded. The majority of the competitors showed plans working from a centre, intersected by a tower.

The church as built corresponds with the competition drawings, since only slight variations were required. These affected the height of the tower, the setting back of the space for the organ, and the rearrangement of the seating accommodation on the ground floor.

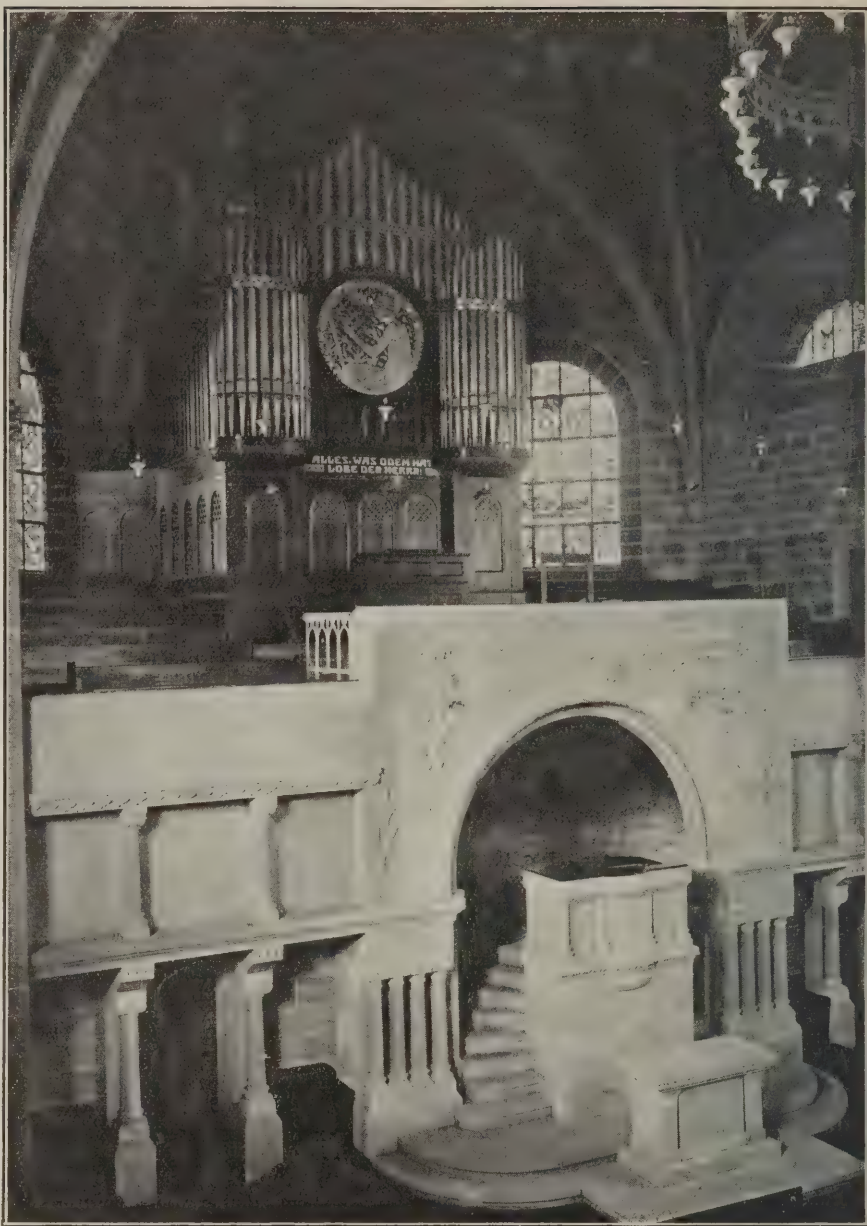
The plan consists of a simple cross, in the shoulders of which are the porches of the side entrances and stairs leading to the galleries. The arms of the cross are separated from the central space by arches on three sides. The eastern arm is shut off by a so-called chancel wall, and thus furnishes a special room for meditation, baptisms, small wedding parties, &c. To this room is added a spacious niche which serves as a sacristy. The four galleries rest on the arms of the cross, that over the chancel and chapel forming the organ gallery.

Over the space set apart for the congregation rises the great quadrangular tower, in two stages, the lower one being blind and the upper having openings. Above the clock is a tiled spire rising to a height of 63 metres (about 210ft.) surmounted by a gilded ball. The upper part contains a roomy belfry, distinguished on the outside by ornamented arched openings. The chimes consist of five bronze bells that call the faithful to church and announce the hours and quarter-hours. The exterior surface around the belfry openings is richly embellished, and on the slanted corners of the pinnacles at the base of the spire are carved four female figures, each with a musical instrument: one, with a triangle, says, "I announce Joy"; another with a bell, "I announce Time"; the third with a harp, "I announce Hunger"; and the fourth with a trombone, "I announce Death," the respective legends being chiselled out on the nimbi.

Below the belfry is a parapet ornamented with carving of a similar nature to that above, and at the corners are pinnacle buttresses bearing symbolical figures of the four Gospels, Matthew being represented by an angel, Mark by a lion, John by an eagle and Luke by an ox.

Light into the body of the church is admitted through the round-headed windows in the arms of the cross, both above and below the galleries. In the four corners of the cross are side entrances, of which the northern, as the bride's door, enjoys a special architectural ornamentation (see p. 54). The two auxiliary entrances at the rear are in direct communication with the staircases, which are enclosed in half an octagon. The front staircases lead down to the main entrance porch, where is a wide narthex. The main entrance is very profusely decorated; the two ornamental door-posts carry figures of angels rising over dragons, symbolic of the conquering truth of Christianity: above the portal are the words, "Thy Kingdom Come."

The gabled front of the principal façade has a richly-worked window, enclosed by a semi-circular band of carving and two orders with rounded mouldings, the gable being crowned by a bronze figure of Archangel Michael triumphant over the dying dragon: the composition of this group is very pleasing, though it has been said to be too light and small in proportion to the mass of the tower.



CHURCH OF ST. PAUL, BASLE: CHANCEL WALL AND ORGAN GALLERY.
CURJEL AND MOSER, ARCHITECTS.

The front entrance leads through double doors under the western gallery, spanned by three vaults. Proceeding, the whole interior of the church gradually opens up. Attention is at once drawn to the chancel end, which is worked in stone. In the centre is a semi-circular recess with pulpit in front, approached by stairs on each side: while below is a stone communion table. The recess is lined with gold mosaic, and around is carved intertwining ornament with angels at the corners. On either side is a door opening into the chapel below the organ gallery, and above these doors are columned spaces set apart for mosaic decoration, which will be provided as soon as funds allow.

Behind the chancel wall, under a large arch, is the organ gallery, the vaults and walls of which are ornamented with filigree work on a blue ground, as a set-off to the organ; this latter is not enclosed, and the pipes are held together with gilded hammered bands. In the back wall on either side of the organ are deep-set stained-glass windows, that on the left representing the Angel of the Last Judgment.

The remaining surfaces of the church are in white plaster. The walls are of yellow Vosges stone. The four large pier capitals

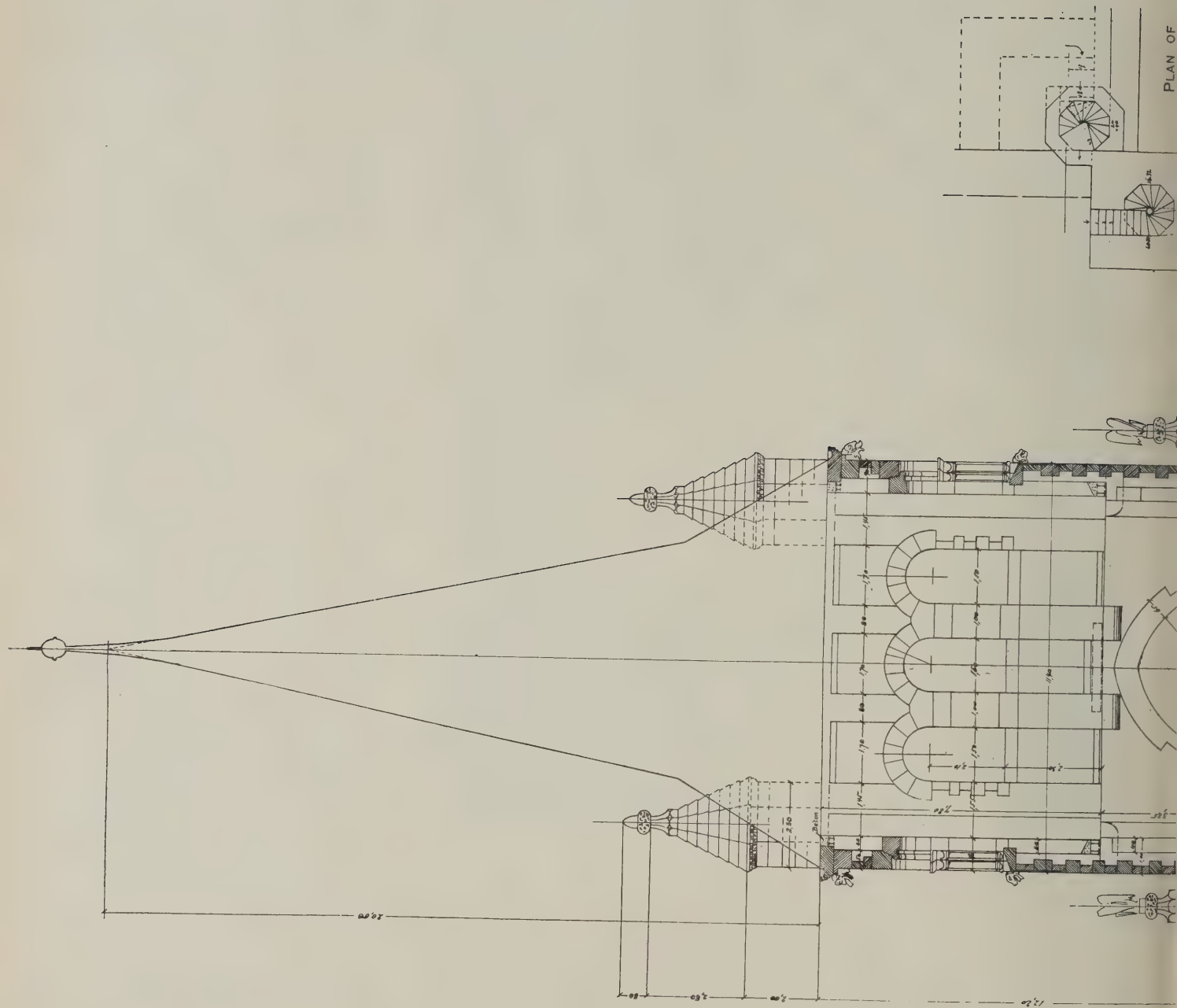
and the bosses at the intersection of the vaulting ribs are touched with bright colour and gold, and the face of the corona to which the ribs radiate is decorated with the signs of the zodiac. But for the rest the windows afford colour. The seating of the church is so arranged that every worshipper in the nave and galleries has a clear view of the pulpit, communion table and baptismal font. The passages and space around the communion table are laid with red tiles.

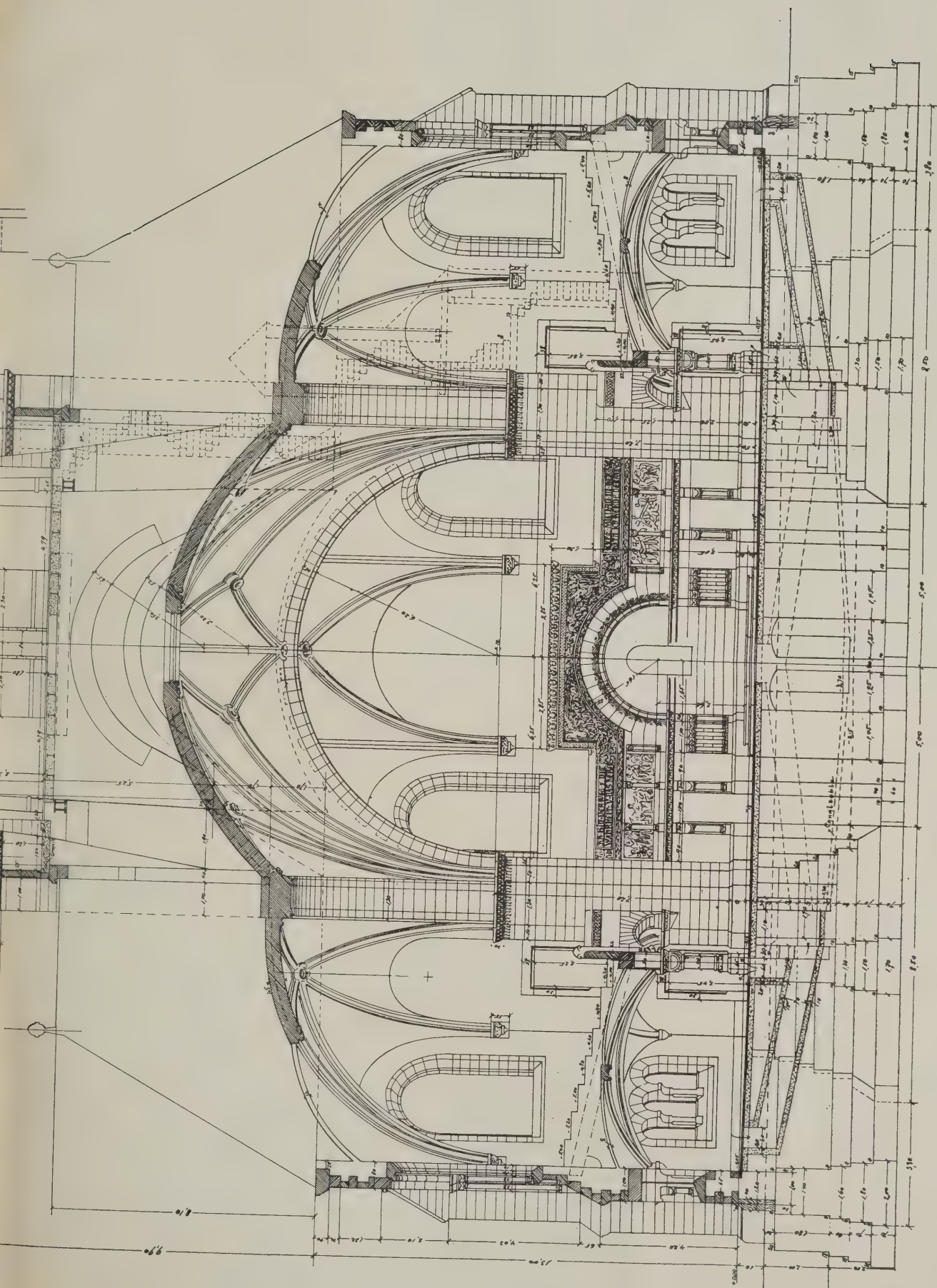
The acoustics have been found to be excellent, both with a full and an empty church. The building was finished last year and will be heated by hot air and lighted by electricity. The architects were Messrs. Curjel & Moser, of Basle.

Church architects in this country will doubtless be particularly interested in this design, because it is very typical of what is being done at present in Germany, and embodies the chief aims of the modern school of church architects abroad. Celtic and Romanesque models seem to be the source of its motives, though everything is treated in a modern spirit. Attention is drawn to the section reproduced in the centre plates this week, as being more like an engineer's drawing than an architect's.

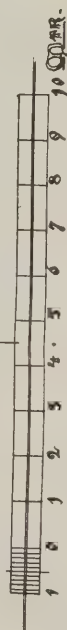
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Supplement to
THE BUILDERS' JOURNAL AND
ARCHITECTURAL RECORD,
Wednesday, February 3rd, 190





CHURCH OF ST. PAUL, BASLE, SWITZERLAND.



CURIEL AND MOSER, ARCHITECTS.

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PRESERVING STONE- WORK.

Two Important Reports by Prof. Church.

TWO valuable reports by Professor Church, F.R.S., on the treatment of the decayed stone in the Chapter House at Westminster Abbey have just been issued as a Parliamentary paper. Lord Windsor writes a prefatory note. In the first report, which is dated May 28th, 1901, Professor Church arranges the matter in four sections—(1) the nature of the original stone, (2) the causes and results of its decay, (3) the treatment advised, (4) the results and *rationale* of that treatment. He proceeds to deal with them seriatim as follows:—

The Stone Affected.

The thirteenth-century work in the Chapter House was mainly executed in an inferior kind of sandstone from one of the lower beds of the Upper Greensand. This stone, known as firestone and Reigate stone, consists chiefly of silicious sand with some glauconitic grains and particles of mica, all cemented together by carbonate of lime, the latter constituent varying from 7 to 15 per cent. and possibly more in some instances. Freshly quarried, the stone has a greenish-grey hue, is rather porous and fragile, and weathers badly on exposure to atmospheric influences. It contains mere traces of soluble saline matters, such as chlorides and sulphates of the alkalis and alkaline earths. It is rapidly disintegrated by water containing almost any kind of acid, and treatment with weak sulphuric or hydrochloric acid causes a brisk effervescence due to the escape of carbonic-acid gas from the carbonate of lime. As a result of this action the constituent grains of the stones fall apart and the continuity of the material is wholly lost. One other remark is needed concerning the fresh stone—the reaction to test papers of its watery extract (of a decided yellow colour) is neutral, neither acid nor alkaline.

Causes and Results of Decay.

The most obvious result is disintegration—the particles no longer cohere. In many portions of the carved and ashlar work a light touch with the finger or with a sable brush brings off the face, often as a crust of some thickness. And the decay is not confined to the surface, but has in many places penetrated to the depth of 2 in. or more. Another change is shown in the permanently acid character of the watery extract from

the decayed stone and in the very large quantity of soluble salts which this extract contains, ranging from 4 up to 6 per cent., even when the quantity of water employed to prepare the extract has been limited to fifteen times the weight of the decayed stone

taken for the experiment. The salts are chiefly the sulphates and chlorides of calcium, magnesium, potassium and ammonium.

The powdery stone collected from the decayed face of the mouldings and walling of the northernmost side of the Chapter House contains 8.31 per cent. of sulphuric anhydride (SO_3), 0.37 per cent. of chlorine (Cl) and 0.05 per cent. of ammonia (NH_3)—all these substances being practically absent from the stone as quarried.

These figures, with many others of similar import, obtained in the analysis of other specimens of this decayed stone, showed that the sulphuric acid of the Westminster atmosphere has been the main cause of the decay. It has attacked the carbonate of lime or calcareous cement of the stone and has turned it into gypsum—in so doing disrupting the material. The sulphuric anhydride found (otherwise sulphur trioxide) corresponds to no less than 17.85 per cent. of gypsum; indeed, there was no carbonate of lime left, and the decayed stone no longer effervesced with acids. The chlorine found in the analysis indicated another destructive agent at work upon the stone, namely, hydrochloric acid, in part derived from the operation of glazing stoneware with salt in the Lambeth potteries. But the ratio between the hydrochloric acid and the sulphuric acid comes out about 1:27, so that Professor Church says he cannot attribute a large share in the damage wrought to the former acid. In the Chapter House stone the ammonia found is a negligible quantity, but it occurs in larger proportions in the decayed stone of the entry and in that of the cloisters themselves.



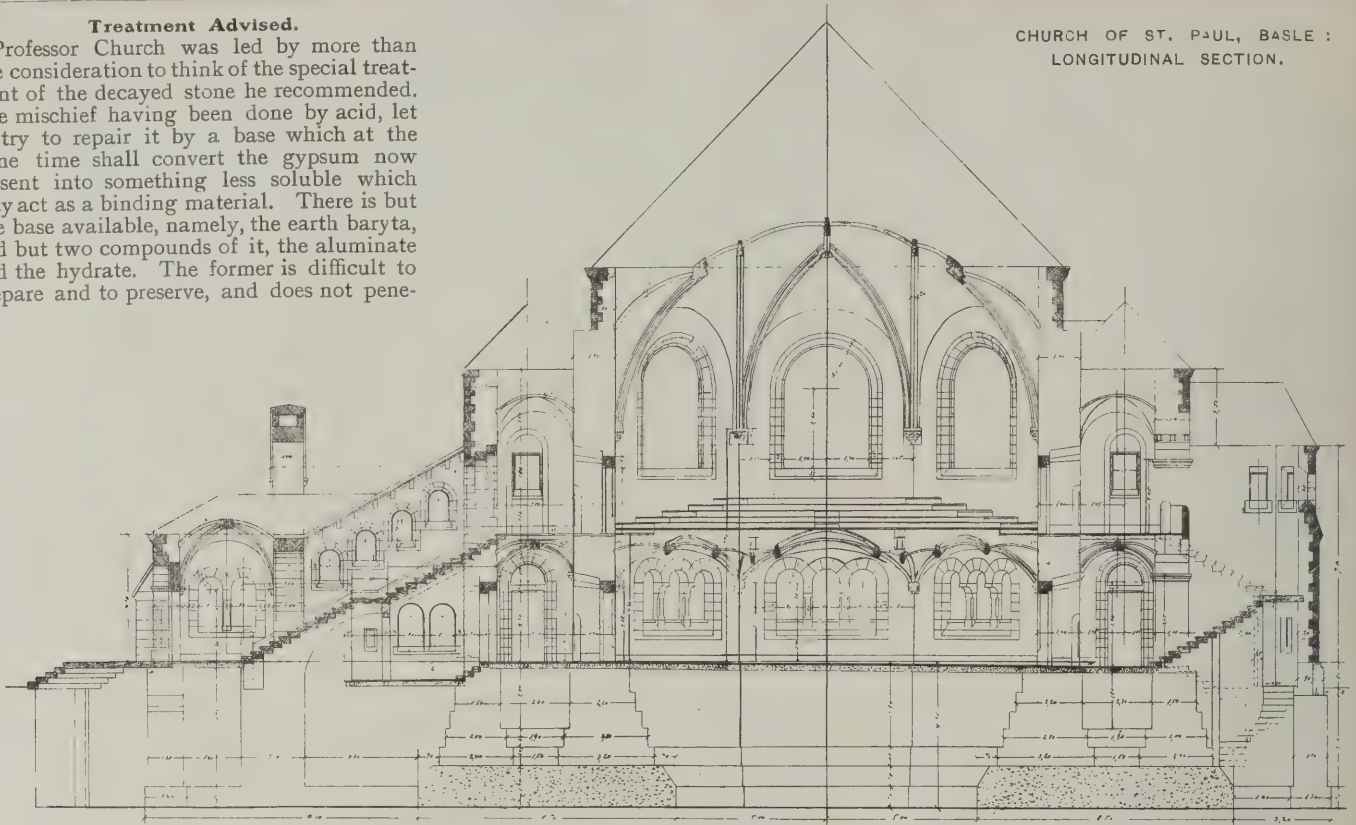
CHURCH OF ST. PAUL, BASLE: ONE OF THE TRANSEPTS.



COMMUNION TABLE.

Treatment Advised.

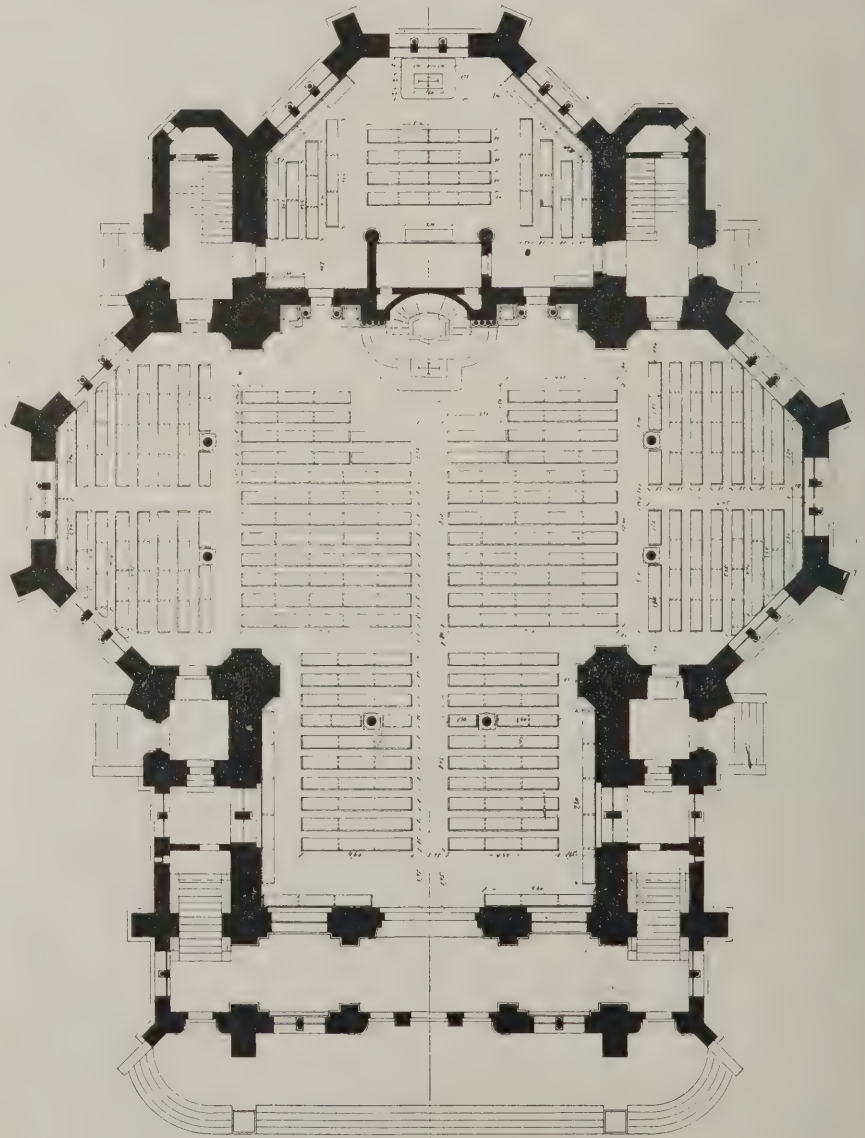
Professor Church was led by more than one consideration to think of the special treatment of the decayed stone he recommended. The mischief having been done by acid, let us try to repair it by a base which at the same time shall convert the gypsum now present into something less soluble which may act as a binding material. There is but one base available, namely, the earth baryta, and but two compounds of it, the aluminate and the hydrate. The former is difficult to prepare and to preserve, and does not pene-

CHURCH OF ST. PAUL, BASLE :
LONGITUDINAL SECTION.

trate the decayed stone so readily nor so far as the hydrate, although a much stronger solution of it may be made.

On full consideration of the subject, and after many experiments with the decayed stone, Professor Church came to the conclusion that pure baryta-water, that is, a solution in water of barium hydrate (or hydroxide, BaH_2O_2), saturated at the summer temperature, when it contains about 3 per cent. of baryta (BaO), would probably achieve the end in view. By direct trials he proved that this liquid penetrated the decayed stone to a depth of several inches, and that it did not possess any tendency to form an impervious crust on the surface. He further found that a few applications of the liquid produced no appreciable hardening and consolidating effect on the decayed stone, but that a point was at last reached when after the sixth, or it might be only after the twelfth, treatment the stone was not only completely reconstituted but had become harder and more solid than when in its original condition.

The baryta method demands certain precautions in practice. Dust should be removed from the surface to be treated by means of a jet of air, which may be conveniently produced by a Fletcher foot-blower. Then the baryta-water should be applied to the tender surfaces of the decayed stone by means of a White patent pneumatic diffuser, the use of a brush of any kind at this stage being inadmissible. As baryta is decidedly toxic, the workmen engaged in spraying the stonework must be cautioned as to the necessity of washing their hands before eating; it is advisable for them to place a crystal of sulphate of soda occasionally on the tongue and to swallow the solution formed; by this means any insoluble barium compounds in the mouth are changed into the insoluble and innocuous sulphate. After several sprayings and the lapse of a few days the stonework will have become hard enough to bear the application of a paint-brush freely charged with baryta-water. Some parts are sure to need more frequent applications than others: it is easy to ascertain by the touch when the induration is complete.



PLAN OF CHURCH.

9 0 1 2 3 4 5 6 7 8 9 10 M.

Chemical Results.

The chemical action of baryta-water upon this decayed stone consists essentially in the conversion of the sulphate of lime present into sulphate of baryta, with the simultaneous production of hydrate of lime. The sulphate of baryta, being insoluble, cannot in the future be altered by acid in the air: the hydrate of lime will be reconverted gradually into carbonate and will then have reassumed its original state in the stone. The minor chemical actions occurring are negligible, but there are two that may be here noticed. These are the liberation of any ammonia in the decayed stone and the neutralization of its acidity.

All the trials of the baryta method led Professor Church to the conclusion that the good effects of this treatment are not only permanent but are not in the least likely to be followed by any bad consequences in the future, although it may be necessary to repeat the treatment on some subsequent occasion.

After treatment with baryta a slight white film of carbonate of baryta appears upon the stone. If thought desirable it may be easily brushed off, but in reality it constitutes a defence against the further attacks of atmospheric acids. This white film may be concealed by a delicate dusting with raw umber in fine powder, which gives the surface the precise tone which it acquires by the deposit of sooty and tarry matters from the atmosphere.

Professor Church's Second Report

is dated November 18th, 1903, and the particulars given are in continuation and completion of those embodied in the first report.

As the preliminary trials in 1900 of the treatment with baryta-water appeared wholly successful after the lapse of a year, four bays of the Chapter House were operated upon in the summer of 1901 and the remaining four bays in 1903. The outer or western face of the entrance archway, which had been sprayed four times with the solution in 1901, was again treated several times at the end of July and the beginning of August last year to complete the consolidation of those parts which were most decayed. A decayed Purbeck marble column and the lower part of the adjacent jamb of a doorway in firestone had been treated by the baryta process in the summer of 1901. This stonework is situated on the right-hand wall of the entry, close to and just outside the gates which divide the entry into two sections, the eastern and the western. The interest of this test lies in the success which has attended the treatment of a second kind of stone—the Purbeck marble.

Quantity of Solution Used.

The actual amount of baryta-water employed in treating the decayed stonework of the interior of the Chapter House and the exterior of the entry-bay was 220 gals., the area covered being about 560yds. super. It was found that in the first spraying 1 gal. sufficed for 21yds. super., and for 21yds. to 26yds. in the subsequent sprayings and paintings. On an average, the whole surface was treated nine times, the band of ashlar work above the arcading being included in the treatment.

At the ordinary summer temperature 1 gal. of a saturated solution in water of slaked baryta (barium hydroxide or hydrate) contains, or should contain, an amount of this compound corresponding to 2,100 grains, or 4 ozs. 350 grains of barium oxide or baryta; 1 gal. of the corresponding lime-water contains no more than 88 grains of lime; or, in other words, lime possesses about one $\frac{1}{24}$ th the solubility of baryta. As, however, the combining proportions or equivalents of these two bases are baryta = 153, lime = 56, baryta possesses but one-third the saturating power of an equal weight of lime. This

fact might be supposed to indicate that baryta-water would prove no more than eight times ($\frac{24}{3} = 8$) as effective as lime-water in the treatment of decayed stone. Actually, however, the case is very different, since lime-water affects no appreciable consolidation of such stone, while baryta-water, if applied freely enough, produces the striking results obtained at Westminster, owing to its specific action on the calcium sulphate in the decayed stone, as already described.

indeed, until the deeper parts of the stone have become consolidated and thus less porous that the parts nearer the surface receive the full benefit of the treatment. In fact, no appreciable consolidating effect was produced upon the worst portions of the surface until it had been sprayed four times at least, while the deeper parts were found to have been already hardened.

With reference to the employment of baryta-water in this protective treatment Professor Church observes that more than forty years ago he patented a process for



CHURCH OF ST. PAUL, BASLE: MAIN DOORWAY.

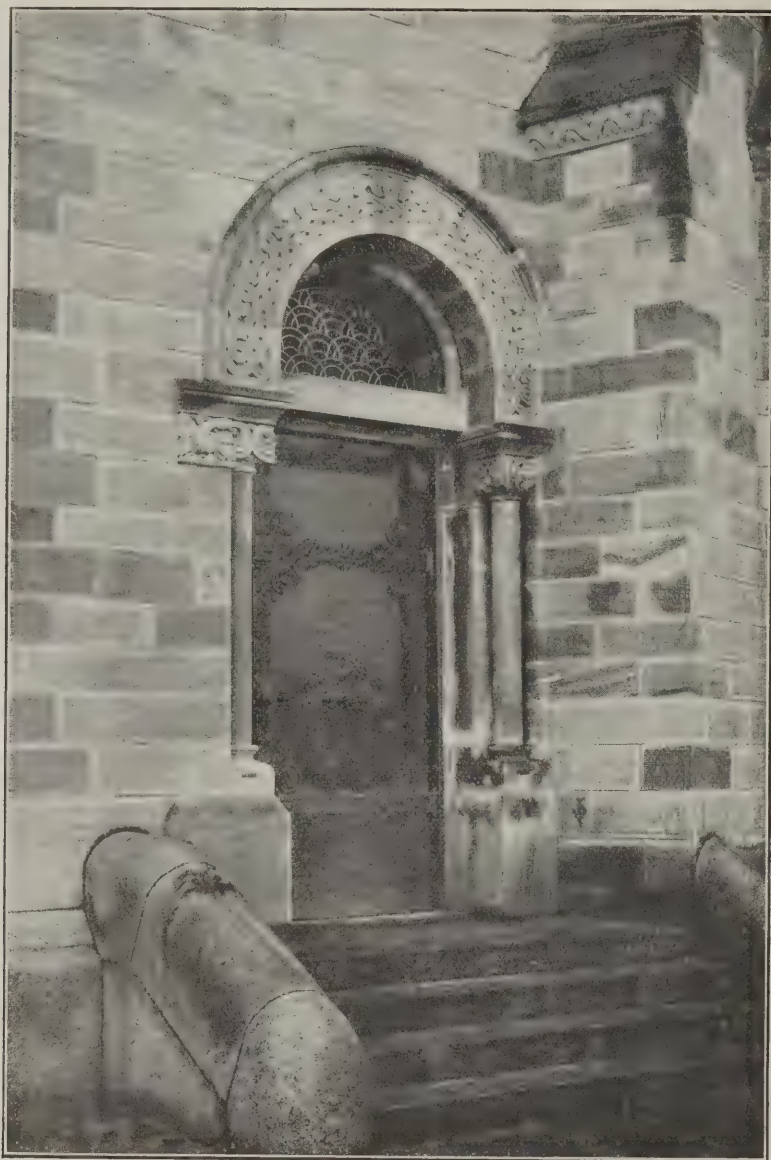
The actual weight of baryta (BaO) which the decayed stonework in the Chapter House has absorbed, after making an allowance of 16 lbs. for accidental loss of material and for the occasionally imperfect saturation of the solution used, approaches 50 lbs. avoirdupois.

Advantages of Baryta-Water.

One advantage over most other preservative solutions possessed by baryta-water lies in the depth to which it penetrates the decayed stone. In some laboratory experiments on firestone from the Westminster cloisters this depth exceeded 3in. In fact, by repeated sprayings and paintings the decayed stone is hardened, as it were, from the back and not merely at the surface. The formation of a superficial crust is avoided, and it is not,

preserving stone (No. 220 of 1862) in which baryta-water was used alternately with a solution of free silicic acid in water—not an alkaline silicate. In that patent he stated: "In certain cases I not only permit the stone or other material to absorb as much as possible of the above-named solutions, but I repeat the consecutive application of the two solutions." Such treatment, though it has answered well when applied as a protection to new stonework, has one drawback when used on decayed material—the silicic acid solution clogs the pores of the surface and prevents the baryta solution from penetrating the stone to a sufficient depth.

It should be mentioned that the use of baryta-water, associated with solutions of certain fluorine compounds, was claimed in



CHURCH OF ST. PAUL, BASLE: THE BRIDE'S DOOR.

a petition dated June 6th, 1861, of the late Mr. Jesse Rust, but the patent was never completed: in fact, the derivatives of hydrofluoric acid which were to be used alternately with baryta-water involved the same disadvantages as the solution of silicic acid in the patent of 1862. The employment of solutions of the silicofluorides of aluminium and alkaline earths, originally suggested by Mr. (now Sir) William Crookes, has survived in the application of the so-called "fluat," which certainly affords a measure of protection to uninjured limestone, but is useless in such a case as that now under consideration. There were two reasons which prevented the employment of baryta-water alone as a stone-restorer and preservative until the Westminster experiments. One of these reasons was the failure to realize the fact of its efficiency when applied an adequate number of times; the other reason was the cost not of material but of labour.

Wall-Paintings in the Chapter House.

In concluding his report Professor Church makes a few remarks concerning the condition and treatment of the fragmentary wall-paintings still to be seen in the Chapter House. The earlier and better of these, upon the flat surfaces of the arcading on the east side of the octagon, belong to the middle of the fourteenth century. As the stonework on which they had been painted was in a sadly decayed condition, it was treated with baryta-

water in the way already described. It was hoped that the solution would penetrate behind the paintings and consolidate the ground. This hope was realized in part, but some portions of the surface-layer of paint and gesso are still almost detached from the stone behind them. The remains of wall-painting on the south-eastern, south and south-western bays were similarly treated, but to the later and poorer work of the north-western bay, painted about the end of the fourteenth century, no baryta-water was applied, for it was firmly attached to the wall. The surface was, however, first cleansed with distilled water, then allowed to become dry, and finally treated with oil of spike-lavender containing a very small quantity of Mr. Gambier Parry's spirit-fresco medium. This was done because the varnish applied to these paintings by Sir G. Gilbert Scott could not be safely removed, although it had become dull and dark. So it was necessary to apply a liquid which would partially restore the translucency of the obscuring layer of varnish. It is proposed to treat in the same way the remaining fragments of painting in the southern bays.

The Academy.—The dates for the reception of outsiders' works have not yet been announced, but as the members' day has been fixed for April 5th that for outsiders will probably be March 28th.

Bricks and Mortar.

Aphorism for the Week.

Don't let us vex ourselves to cure the antepenultimate blunders of the world, but fall on to our own blunders. Let us leave the dead alone and build for the living and those that shall live.—WILLIAM MORRIS.

Architectural Books.

A LECTURE on the architectural books in the Liverpool Library was delivered last week by Mr James Hutt, M.A. In regard to books of reference, Mr. Hutt said the dictionaries of Britton, Parker and Gwilt, and the recent work by Sturgis, as well as the "Dictionnaire Raisonné" of Viollet-le-Duc, merited special attention. General reference books and histories were represented by d'Agincourt, Fergusson and Ruskin. On ancient architecture and art generally the principal works were those of Perrot and Chipiez. Fergusson dealt with India, Layard with Nineveh, Stuart and Revett, Chandler and Cockerell with Greece; Wood, Berkenhout and Parker with Rome. Pompeii formed an interesting source of knowledge on all departments of ancient art, and the works by Gell, Boissier, Marriott and Gusman were particularly mentioned. Moorish architecture was represented in Murphy and Lewis's works on the Alhambra, whilst works on English architecture were numerous, attention being called to those of Carter, Britton and Pugin. Brandon and Sir G. Gilbert Scott were the authorities on English ecclesiastical work. Continental architecture of later times was the section in which the library was rather weak, but the works by Pugin and Le Veux and Viollet-le-Duc were some of the best on French.

The New A.R.As.

M. LEON BONNAT, M. Emmanuel Frémiet, Mr. Frank Brangwyn, Mr. C. W. Furse and Mr. H. Pegram are the new Associates of the Royal Academy, elected last week. Mr. Brangwyn was born at Bruges, that beautiful and sleepy Flemish city which Mr. Alfred Gilbert hopes to transform into a centre of living art. His father, of Welsh extraction, was an architect, who set up at Bruges an establishment for the reproduction of ancient tapestries and embroideries. Mr. Frank Brangwyn was brought to England when a boy, and at an early age entered the designing-rooms of William Morris & Co. Tiring of this he went to sea. As a decorative painter he has probably few equals living, and his abilities in this direction have full scope in the large scheme he is now carrying out in the City at the Skinners' Hall. He is also engaged on a fresco, illustrating "Modern Commerce," for the Royal Exchange. Mr. Furse is the third son of the late Archdeacon of Westminster: one of his brothers is the sculptor, Mr. J. H. M. Furse. Mr. C. W. Furse received his early artistic training at the Slade School under Professor Legros, and he carried off one of the Slade scholarships of £50, tenable for three years. Later he studied in Paris, and in 1888, when he was twenty, he was for the first time represented at the Academy by a picture entitled "Cain." In 1890 he showed at Burlington House a portrait of the late Sir Arthur Blomfield, A.R.A. His "Return from the Ride" was one of the most successful pictures in last year's Academy. Mr. Pegram received his earliest art education at the West London School of Art. Thence he went to the Royal Academy Schools, where he was the contemporary of the late Harry Bates, Mr. Frampton, Mr. Goscombe John and Mr. Pomeroy. Later he worked for several years in the studio of Mr. Hamo Thornycroft, R.A. Among his many works are the huge bronze candelabra in the nave of St. Paul's Cathedral.

R.I.B.A.

The Gold Medal: President's Address to Students.

A MEETING of the Royal Institute of British Architects was held at 9, Conduit Street, W., on Monday evening last, the chair being occupied by the president, Mr. Aston Webb, R.A.

It was announced that the Council would propose to His Majesty the name of M. Choisy, of Paris, as the recipient of the Royal Gold Medal.

A letter was read announcing that the late Mr. H. Saxon Snell had bequeathed the sum of £750 for the foundation of a new architectural scholarship by the Institute.

The president then delivered his address to students.

Mr. Webb spoke of the pleasures in connection with architecture. Of course the greatest pleasure of all was in the work itself, and if a student did not experience that he had better throw up architecture and take to something else before it was too late.

A pleasure which an architect should cultivate was reading—poetry of all sorts, romances, plays, and imaginative works generally, for in order to be creative one had to be receptive; "you cannot always be giving out unless you are also taking in."

Another pleasure was the study of painting and sculpture (modern and antique).

Travel was a pleasure that would naturally appeal to an architect. There was plenty of scope for it in London alone, where were two of the finest Gothic and Renaissance churches in the world, a series of Renaissance parish churches unequalled anywhere, and a wealth of domestic and commercial buildings, ancient and modern, that would take a man's life to know. Sir Lawrence Alma-Tadema had given a needed hint last year to those about to travel, not to go abroad till they knew something of their own country and their own city.

To enjoy travel properly it was necessary to sketch and draw a little. The true value of this was to enable the student to arrive first at the end the artist aimed at, and then discover the means he employed; apart from which all pretty draughtsmanship was quite thrown away. "Still, sketching will always remain, however pursued, one of the recreations of an architect's life. Painting is not for him, except of course a general knowledge of painting and sculpture—enough to enable him to form an opinion of good and bad, and to distinguish the works of different masters by their various methods; and no man should think of going to Italy without first mastering to some extent our great collection in Trafalgar Square."

Archæology, said Mr. Webb, was a good servant but a bad master. "We have allowed it to be our master for close on a century, and in return it has well-nigh strangled all the life out of us, so that we dare not call our style our own. The other day I was asked to write my opinion on what is called 'l'Art Nouveau.' I was obliged to decline; but had I done so I should have said that, though no admirer of that particular phase of art expression, I welcome almost any effort to break through the paralyzing trammels in which archæology has bound so much of our work. Still, what greater pleasure can there be than to stay in a country village and trace the growth and history of its parish church?"

Then there were what might be called the somewhat sterner pleasures, such as the study of geology and chemistry.

Music, too, if one were gifted that way, would give endless pleasure, if not apparently in very direct connection with one's work; yet there might be more relation between the harmonies of sound and the harmonies

of proportion than was at present dreamt of in our philosophy.

Another pleasure of a very different kind was that of criticizing—but one of the greatest pleasures their work offered was the opportunity and pleasure of friendship. "A policy of splendid isolation is least of all suited to an architect amongst artists. You will, if you are wise, be friends with all whom you employ. You will get better work from an intelligent mason by a little friendly chat with him than with all your stringent clauses in specification and conditions of contract."

Again, the pleasure of friendship with brother architects was one that might last a lifetime. "Our meetings here and at the Architectural Association offer the opportunity of sowing the seed, which can be strengthened in numberless ways. For myself, I have always been a member of one or more small coteries that meet periodically at each other's houses, and they have always been red-letter days to me."

The greatest pleasure of all was in going over our completed building, in which we had done our level best, with all the skill which we had been able to bring to bear upon it—no detail ill-considered, no requirement overlooked. What more touching picture than the aged Christopher spending each birthday, after the completion of St. Paul's, under its mighty dome!

A Review of the Prize Drawings.

The secretary next read a review of the works submitted for this year's prizes and studentships, by Mr. J. S. Gibson, F.R.I.B.A.

Of the Essay he said that repeated attempts had been made of recent years to get a good response for this medal, and this year eight competitors entered the lists; but it was disappointing to think that not one of these had sufficient grasp of the subject or literary style to secure the prize. One had not to be a Ruskin in language to obtain it: literary style and finish were no doubt essential, but the cultivation of style would in itself be a pleasure and bring its own reward. To those who were ambitious there was an incentive in knowing that the name of Thomas Hardy would be found as the prize essayist for 1862. In taking leave of the subject Mr. Gibson said that great difficulty was experienced in obtaining subjects for the Essay, and also for the designs, and any suggestions would be welcomed.

The Measured Drawings.

"The medal goes to Mr. L. M. Gotch for a creditable set of drawings of the Church of St. Oswald, Ashbourne, Derbyshire. The $\frac{1}{2}$ scale drawings are all good: clear records of an interesting work carefully rendered—just what we have a right to expect in measured work. The $\frac{1}{2}$ in. scale is very weak in freehand drawing, of which there is very little in this set; and in this respect it falls below both the sets distinguished by honourable mention. The full-size sections are unsympathetically drawn; there is too much compass work about them. Remember that T-square and compass drawing is the most elementary kind of drawing and easily acquired. All students would do well in their full sizes to make it quite clear which is the section side of their mouldings, as several of those submitted would read equally well either side, and I would suggest a flick of the brush occasionally on the inside of the moulding or a thick and thin section. . . . The $\frac{1}{2}$ in. details of tracery windows submitted by Mr. G. S. Salomons are beautifully drawn and deserving of commendation."

The Pugin Studentship.

"The medal is awarded to Mr. F. C. Mears for a comprehensive set of drawings of rather unequal merit. The coloured sketches are sadly lacking in clearness and vigour, and do not express the character of the work. The measured drawings are very good, and

those of Pershore Abbey are particularly fine. The pencil and wash drawings are much better than the coloured work, and show sympathy with the mediæval architecture—work which this studentship was founded to foster—and I have no doubt the student will greatly benefit by his further studies of it. A medal of merit has been awarded to Mr. W. S. A. Gordon for his well-chosen subjects and sympathetically drawn work. The pencil drawings are among the finest ever submitted in this competition."

The Owen Jones Studentship

is awarded to Mr. W. Davidson as the best of the five competitors. The drawings show a certain facility in handling water-colours and an ability to draw the figure, more than an appreciation of architecture decoratively treated with colour, of which there is no good example among his exhibits. I would especially direct the attention of students to the unwise practice of late years to show examples of marble and mosaic floors and wall linings of elaborate geometrical patterns, which apparently entail an enormous amount of purely mechanical drawing to portray, the artistic results of which are so limited in scope and value. The endeavour of the student should be concentrated on getting a grasp of the motive that underlies the decorative scheme of any building, the basis upon which the scheme is founded. A note of the detail of a floor or a frieze which is almost entirely geometrical and mechanical in the repetition of its parts is quite enough if the note be a true one as to colour and form. . . .

The water-colour sketches submitted by Mr. H. Morley are an attempt to depict the tone and effect of buildings and landscapes, but they are not very successful as such; and certainly do not bear any relation to the purposes for which the studentship was instituted. His drawings of purely architectural detail, such as the full sizes of a painted altar-piece, are feeble in the extreme. I would strongly urge students to concentrate their energies on architecture decorated with colour, to portray examples of church roofs, arcades, walls, and domes; they will find the work just as interesting as doing a few scraps of glass or mosaic or tiles, and they will be better equipped to deal with the decoration of their own buildings. They will thus be able to dispense with about one-half of the drawings now sent in, and the Council will be much better able to judge if the winner is likely to benefit from the further study which the studentship affords."

The Grissell Prize.

"Mr. W. Hepburn comes easily first. The design is an excellent one, clever in inception, splendidly drawn, and carefully worked out in all its details. The problem is one in carpentry, and one which has been solved by the old carpenters who worked on our mediæval cathedrals in many beautiful and interesting ways, and I think as an exercise it should be worked out logically in the same fashion and not have rolled steel joists and concrete floors introduced into its solution, as is done by some other competitors. I do not mean for a moment that we should discard the modern steel joists and other inventions, but rather that an exercise in carpentry should be worked out in carpentry, and one in stone worked out in that material. With the exception of the first design, the draughtsmanship of the others is hardly up to the standard one would expect."

The Tite Prize.

"The subject of 'A Crescent in a Large City' is an exceedingly attractive one, and I am glad to see 11 entrants, all of them being creditable efforts, and some of considerable merit. The prize is awarded to Mr. Heaton Comyn for a nicely proportioned scheme thoroughly well thought out and capably drawn. We expect to find in this and the Soane

(Continued on page 58.)

THE MODERN SANITARY ENGINEER.

IN his recent presidential address to the Institute of Sanitary Engineers, Mr. William H. Maxwell, A.M.I.C.E., borough and waterworks engineer, Tunbridge Wells, said that two centuries ago the mortality of London was as high as 80 per 1,000, whilst to-day it was less than one-fourth of that rate. Public sanitation was almost unknown a century ago, and little or no progress was made prior to the appointment of the "Health of Towns Commission" in 1843.

The report of that commission showed that at the beginning of the nineteenth century town drainage was in a most primitive condition. Even in the largest towns of the United Kingdom there were few, if any, sewers as now understood, and those which did exist were mainly for carrying away surface water. The report stated that "in some of the larger and most crowded towns all entrance into the sewers by house-drains or drains from water-closets or cess-pools is prohibited under a penalty. In other places, including a part of the metropolis, the entrance of the house-drains is commonly deemed the concession of a privilege, subjected to regulations and separate proceedings, with attendant expenses, tending to restrict the use of the sewers for these most important purposes or to confine the advantage to the wealthy."

The evils attendant upon such sanitary retrogression were now well understood. The order of to-day was towards higher and higher standards of efficiency in design, workmanship and materials. The smooth-bore hermetically-jointed pipe had replaced the rude conduits of the past, and the whole installation of drains, soil-pipes, sanitary fittings and so forth was looked upon as forming one complete hydraulic system requiring scientific intelligence in its design and close supervision and testing in its execution.

The gross pollution of the Thames led to the construction of main intercepting sewers on both sides for the purpose of preventing the admission of sewage into the river. These works were completed in 1864 and 1865, and included the provision of powerful pumping machinery for the purpose of raising the sewage into a northern and a southern outfall sewer, the former discharging at Barking and the latter at Crossness, where the sewage after treatment fell into the estuary of the Thames.

Speaking of "jerry-building," Mr Maxwell enumerated some of the main evils to be avoided. They were:—Low and damp building sites not readily accessible to plenty of sun and air, trees too close to the building, clayey subsoils, made ground, foundations without damp-courses, insufficient cubic capacity of air-space in the rooms of dwellings, inadequate window area for light and ventilation, bad arrangement or placing of water-closet compartments having doors and windows communicating with other rooms instead of directly with the external air wherever possible, inferior mortar, leaky roofs, smoky chimneys.

Possible defects in the drainage were too numerous to mention, but he had known cases where gulleys or surface covers had been placed at each end of an imaginary drain but with no pipes laid between; also cases where such materials as garden mould and house refuse had been used in the making of mortar—the former material being a great favourite in certain localities.

In considering the subject of sewerage there were many new features to be noted, and decided advances on the older methods. One noticeable feature was the care now taken in the calculation of the discharges of different sizes of sewers and the close application of the sciences of hydraulics

and hydrostatics to the design of all main drainage works. Great precision, too, was now rightly demanded in the setting-out and execution of such works, so that the sewers might be laid only at self-cleansing velocities with true invert lines, and perfectly straight from manhole to manhole. All this was in striking contrast to the old rubble stone conduits simply following in some cases the contour of the ground with no regard whatever to the requisite hydraulic grade-line.

Other noteworthy features in modern sewer and drain construction were the extended use of cast-iron in place of the usual salt-glazed stoneware pipes, the separation of a large proportion of the storm water from the sewage proper by the use of duplicate sewers, and the adoption of artificial means of raising the sewage of low-level districts, as done by the Shone "Ejector" compressed-air system or by compressed air produced by the fall of sewage from higher parts of the district.

Sewage Disposal.

Speaking of sewage disposal, Mr. Maxwell said there was perhaps no department of scientific enquiry which had been so revolutionized in the methods of modern practice during the past few years.

As a popular summary of the treatment and disposal of London's sewage, it might be stated that the flow during the year 1902 represented a canal 24ft. wide, with a depth of about 9ft., running day and night at a rate of 2ft. per second—or equivalent to a lake 44 sq. miles in area and 11½ft. deep. The quantity of sludge sent to sea would cover Hyde Park, an area of 400 acres, to a depth of about 5½ft.; and during the year the fleet of six sludge steamers travelled a total distance of 260,600 miles, representing a journey of nearly 10½ times round the earth.

The many different methods of treatment in use to-day might be classified under one or other of the following heads:—The dry-earth system, discharge into the sea or tidal estuary, irrigation, filtration, precipitation, evaporation (as by Liernur's English Syndicate), electrolysis (Webster's process) and bacteriolysis.

Experience had shown that none of these methods, except the last, when put to the test of practical proof had proved satisfactory. Irrigation and the dry-earth systems were in reality bacteriological methods, but for large populations were quite impracticable. The many chemical methods in use might also be safely dismissed as cumbersome, excessively costly in chemicals, labour and disposal of sludge, putrefaction setting in as soon as the effluents became sufficiently diluted with pure water.

Present-day research, therefore, was almost wholly directed to the perfecting and introduction of bacterial methods of purification.

In the development of this system the bacteriologist, the chemist and the engineer must work side by side in their several departments, and in this way a vast amount of original work had been successfully accomplished during the past decade.

Amongst original workers in the bacterial treatment of sewage had been the authorities of London, Manchester, Leicester, Leeds, Birmingham, Exeter and Huddersfield, and the information thus amassed, and published in many excellent official reports, was of the greatest service to the community at large.

Refuse Destruction.

Dealing with the disposal of domestic and trade refuse in towns, Mr. Maxwell said the only satisfactory system was destruction by fire in suitably-designed refuse-destructors. There was a good deal of heat generated in these which could be profitably used, and in the best destructors a calorific value of from 1lb. to 2lb. of water evaporated per lb. of refuse burned was readily realized. If we

took the evaporative power of coal at 10lb. of water per 1lb. of coal, this gave for domestic refuse a fuel value of from one-tenth to one-fifth that of coal, and in this way, where there was suitable work to which the steam power could be applied, the working expenses in connection with the disposal of refuse had been in some cases more than recovered: the generation of electricity, pumping low-level sewage and water, driving mortar mills and other machinery at sewage works were mentioned in this respect. Advantage had also been taken of the sale and utilization of the residual clinker from the furnaces for the manufacture of paving slabs, mortar, concrete, bricks, &c.

Builders' Notes.

Messrs. E. Shorland & Brother, of Manchester, have just supplied their patent Manchester stoves to the smallpox pavilions at High Wycombe and to the new hospital at Peasley Cross, St. Helens.

"Simplex" Steel Conduits for Electrical Work.—In the Chancery Division of the High Court of Justice the Simplex Steel Conduit Co., Ltd., recently obtained a perpetual injunction against the Metallic Seamless Tube Co., Ltd., selling "Simplex" goods which were not the plaintiffs'.

Walthamstow and the Workmen.—Owing to the depression in the building trade a large amount of distress is prevalent in Walthamstow and the surrounding districts. The Guardians have resolved to open the labour yard on Tuesdays, Thursdays and Saturdays, and to adopt a more liberal scale of relief. It has also been decided to approach the various local authorities with the object of holding a conference to consider the question of the unemployed, and also with a view of approaching Parliament on the subject.

Edinburgh Building Trades Exchange.—Mr. A. Hunter Crawford recently delivered a lecture to the members of the Building Trades Exchange in the Exchange Rooms, 32, George Street, Edinburgh, on "Building Construction." After referring to the preparation of the plans, Mr. Crawford urged that architects should be more consistent in seeing that the material and method of building specified in the contract be adhered to, both for the sake of the client and also for the sake of the contractor, who in pricing his schedule was frequently doubtful whether all the materials specified would be strictly insisted upon. In the course of the lecture Mr. Crawford brought before the members samples of a new asbestos sand-brick which is shortly to be made in the neighbourhood of Bathgate.

Building at Portsmouth.—The building and allied trades in Portsmouth will be kept fully employed during the present year. Plans for hundreds of houses in various parts of the borough have been passed, and some big works are now in progress, or proposed to be started soon. Good progress is being made with the new military hospital at Portsdown Hill, which is being built by the War Office. The new works for the Portsmouth Gas Co. are being pushed on, and the foundations are being prepared for the new technical institute, which is to cost between £70,000 and £80,000. Other buildings for the Corporation about to be proceeded with are a new school at Milton, to cost over £20,000; new school at Eastney, to cost £24,000; and manual instruction centres at Highland Road and Drayton Road schools, to cost £4,820 and £4,688 respectively. The making of the new high-level relief sewer, involving an expenditure of £38,000, has been commenced; the lowest tender for storage tanks in connection with the scheme was nearly £57,000.

Mr. J. Fotheringham Parker has been appointed managing director of Messrs. Patman & Fotheringham.

Belfast Builders' Association.—At the annual meeting held last week Mr. John Martin, J.P., was elected president and Mr. Robert Corry, J.P., vice-president.

The Sheffield Works Construction Department is to be restarted under the direction of a committee. This was decided at last Wednesday's meeting of the City Council, after a lengthy debate.

School Ventilation.—In the course of a lecture on "Warming and Ventilation" which he delivered recently at the Municipal Technical Schools, Leicester, Mr. David N. Nesbit (managing director of Messrs. Ashwell & Nesbit, Ltd., of London, Leicester, Manchester and Nottingham) said that for school buildings not less than 1,800 to 2,000 cub. ft. of air per hour per child should be provided.

Iron and Steel Institute.—The annual general meeting will be held at the Institution of Civil Engineers on May 5th and 6th and the annual dinner—under the presidency of Mr. Andrew Carnegie—at the Hotel Cecil on the latter day. The autumn meeting will be held in New York on October 24th, 25th and 26th. The approximate cost of the stay in the United States is £25.

Dublin Master - Builders' Association.—The following officers have been elected for 1904:—President, Mr. James Beckett; vice-president, Mr. James Kiernan; committee—Messrs. R. Denne Bolton, Thomas Conolly, J. E. Foley, Thomas Mackey, W. Meade, H. Pemberton, E. W. Warren and B. W. Whyte; hon. secretary, Mr. John Good, 55, Great Brunswick Street, Dublin. The annual dinner has been fixed for February 11th at the Antient Concert Rooms.

Tenders for Kingston Museum and Art Gallery.—At the last meeting of the Kingston-on-Thames Town Council considerable discussion arose on the recommendation by the Library Committee of the tender of Mr. F. Hawkey (amounting to £3,950) for the erection of the proposed museum and art gallery adjoining the new library (Mr. Alfred Cox, architect). The point under discussion related to a partition and some picture rails, and eventually the matter was referred back to the committee with the view to the acceptance of the tender by Mr. E. Chamberlain, £3,886.

The Building Trades.—Reports give the following conditions of employment in various parts of the country:—*London*: Bad, except with masons, who are moderately well employed. *Northern Counties, Lancashire and Cheshire*: Dull or bad generally, and worse than a year ago. Short time is being worked in some centres. *Yorkshire*: Bad generally, though good with masons at Hull and moderate with carpenters and joiners and plumbers at York. *East Midland Counties*: Moderate with plumbers, dull with other branches. Masons at Leicester and bricklayers at Rugby are, however, fairly well employed. *West Midland Counties*: Fair or moderate in Coventry, Tamworth and Stourbridge, but dull or bad in the larger centres, short time being worked in many cases. *Eastern Counties*: Slack. *Southern and South-Western Counties*: Dull, though masons at Portsmouth and Cheltenham are well employed. *Wales and Monmouthshire*: Slack, except at Swansea, where employment is moderate. Fair demand for carpenters and joiners at Newport. *Scotland*: Quiet on the whole, and rather worse than last year. Moderate with plumbers at Glasgow and Aberdeen, fair with masons at Aberdeen, plasterers at Edinburgh, and plumbers at Paisley, Ayr and Falkirk. *Ireland*: Dull on the whole, but fair with bricklayers and slaters at Dublin, and plasterers, masons and stone-cutters at Cork.

Yorkshire Builders.—At the recent annual dinner of the Yorkshire Federation of Building Trade Employers, held at Hull, Sir Alfred Gelder said that in spite of what croakers had to say about trade being driven away from our shores he felt sure that if they could get their workmen to do an honest day's work for an honest day's pay, and also get them to regard sobriety as one of the chief characteristics of the British workman, we should retrieve all the errors of the past, and the prosperity of the English nation would not be less but greater in the future. Alderman Jessop, an ex-mayor of Huddersfield and president-designate of the National Association, said they had heard a great deal about the Americans and their hustling, but he did not know that England would be much better if they started hustling up their buildings. The buildings put up in America were not half as substantial as those here. Alderman Larard, responding to "The City and Trade of Hull," said he

believed their trade would soon recover from the present slackness. He challenged contradiction that Hull was rapidly becoming, if it had not already become, the best paved city in the United Kingdom. In 1890 the Corporation had 90 miles of streets in their scavenging contracts, in 1898 106 miles, and in 1904 114½ miles. In 1890 the Corporation had 194 miles of streets swept per week, in 1898 282 miles, and in 1904 325 miles; while, owing to the paving, the rate per mile was considerably lower: in 1890 the Corporation paid £40 10s. per annum per mile for streets swept, in 1898 £36 and in 1904 £32 15s.

The Additions to Premises in Glasgow illustrated below comprise the two copper-sheathed oriel windows inserted in the old front, a new doorway and the railings—for all of which Messrs. Salmon & Son & Gillespie, of 53, Bothwell Street, Glasgow, were the architects.



COPPER-SHEATHED ORIELS AND OTHER ADDITIONS TO PREMISES AT THE CORNER OF HOPE AND WEST REGENT STREETS, GLASGOW. SALMON AND SON AND GILLESPIE, ARCHITECTS.

(R.I.B.A.—continued from page 55.)

competition grouping of masses, architectural arrangement, good proportion of the various parts, balance of solids and voids, and refined detail, and I am sure the author of the winning design has an appreciation of these qualities. The arches spanning the two streets are open to criticism in that the haunches appear to be too weak, and this same defect is to be found in other designs. The competitors should study Waterloo and London Bridges, and see what value is to be obtained by having deep voussoirs at the haunches of the arch. The $\frac{1}{2}$ in. detail is nicely drawn, although I am inclined to think that the work is too delicate for a street façade on a big scale. The medal of merit awarded to Mr. A. D. Nicholson was probably given for his capital water-colour. The proportions of his design are good, but the detail is coarse and not well drawn. 'Red Shield' has a fine set of drawings, the $\frac{1}{2}$ in. detail being especially good, but the proportions of the upper and lower parts of his design are too equal."

The Soane Medallion

has been awarded to Mr. F. J. Horth, whose scheme is on the whole the most coherent and satisfactory. The plan is laid out on sound architectural lines, well proportioned and balanced. The interior is also simple in its parts, nicely built up, the exterior perhaps being the least satisfactory part of the design. The interior eye to the dome is very badly managed, and wants some supporting ribs or other means of bringing it into relation with the rest of the work. The detail wants refinement, and the drawing is hardly up to the standard one has reason to expect in our premier competition. Mr. David Smith secures honourable mention for a really nicely conceived exterior, the component parts of which are good, and the general effect is perhaps the best of all the designs. The plan and interior are, however, not up to the same level. It is a great pity that the inspiration of the exterior failed when the plan and interior were fashioned. The drawings are rather slight and lacking in decision and clearness, but they are worthy of distinction. 'Rotunda' sends a restless design, lacking the dignity and reserve which the subject demands. The drawings are probably the best of their kind submitted this year, the interior view being especially good; but even here the author has succumbed to his weakness for flamboyant detail. 'Sanctus Boscus' sends a fine dignified interior which is wedded to an almost impossible plan."

A vote of thanks to the president was moved by Mr. Goscombe John, A.R.A. (who spoke of the encouragement he received from Burges) and seconded by Mr. W. D. Caröe. Mr. Caröe referred with great regret to the fact that the address they had heard would be the last Mr. Webb would deliver from the presidential chair. Adverting to the pleasures of architecture, he said that to him the greatest was in being on the building and seeing it grow, and he often wished it were possible for the architect to have only one work at a time so that he might watch its growth from first to last.

The prizes were then presented. On the walls of the room were hung a number of beautiful drawings made by Mr. James B. Fulton as Soane Medallist for 1903, by Mr. C. Gascoyne (Tite Prizeman) and by Mr. Harold Gibbons (Pugin Student, 1903).

Obituary.

The late Sir Frederick Bramwell died worth £100,798.

Mr. Thomas Mayne, builder, of Weymouth, died recently at the age of eighty-five years.

Mr. James Mullin, builder and contractor, of Liverpool, was buried last Wednesday.

Keystones.

The Year-Book of the Society of Architects has just been issued, price 2s.

The new Buildings at South Kensington Museum are now almost up to the first floor.

The South-Eastern Fever Hospital at New Cross, London, S.E., is to be reconstructed at a cost of £135,200.

A new Public Library at Cirencester is being erected from designs by Mr. V. A. Lawson, A.M.I.C.E., of Cirencester and Stroud. The builder is Mr. G. Draw.

The New Arab Museum in Cairo is to be specially devoted to models of the masterpieces of Arab art, as well as the collection of originals from excavations, &c.

West Cornwall Dispensary and Infirmary, Penzance.—Plans for new building have been prepared by Mr. O. Caldwell, F.R.I.B.A., of Penzance.

The Statue of James II. (by Grinling Gibbons), formerly in Whitehall, has been erected in St. James's Park on a grass plot at the western face of the Admiralty.

An Alabaster Tablet in Rochester Cathedral has been erected in memory of the Kent soldiers who gave their lives in the South African War. Mr. W. D. Caröe was the architect. The tablet measures 8ft. by 4ft., and cost £259.

Osborne House—the gift of King Edward to the nation—has been converted into a convalescent home for officers of the Navy and Army. Accommodation is provided for about fifty patients. The bedrooms are painted a cool light-green with a white dado.

Durban Town Hall.—The design of Messrs. Scott, H. E. Wollocot & Hudson, of Johannesburg, the successful competitors for this building, shows a Classic treatment, with a high clock tower and small domes at the corners of the building. Each of the blocks is divided by an open court 20ft. wide.

Competition Reform Society.—The committee disapproves of the conditions in the competition for houses for the working classes at Bangor because (1) there is no assessor, (2) no undertaking that the successful competitor will be employed to carry out the work, (3) premiums insufficient. Members are requested to abstain from competing unless the conditions are satisfactorily revised.

Competition for Sunderland Town Hall Extension.—The assessor has awarded the premiums of £100, £50 and £25 respectively to the authors of designs numbered 9, 15 and 11 (the names are not yet announced). The estimated cost of the first-premiated design is £27,000, and its main feature is to so alter the existing front of the town hall as to make it and the extension present the appearance of one harmonious structure; this involves the removal of the main entrance so as to place it in the centre of the whole block.

New Church of St. Andrew, Catford.—The foundation-stone of this church (which forms the beginning of the second portion of the scheme won four years ago by Mr. Philip A. Robson, A.R.I.B.A. of Westminster, in limited competition) was laid on January 23rd by the Bishop of Southwark. The church will seat nearly 1,000 persons and will cost £8,600. There is to be no tower and spire, as funds do not and will not permit. The style is "Decorated" treated in a modern spirit and the design rather severe. The plan is somewhat novel, as the chancel and nave are of the same width and the choir is enclosed by an ambulatory. The nave aisles are only passages, so that everyone will be able to see the proceedings. There is no clearstory nor galleries. Mr. F. G. Minter, of Ferry Works, Putney, and Westminster, is the builder and Mr. Comport the clerk of the works.

Barrow-in-Furness new Technical Schools have just been completed.

Whitefield's Tabernacle, Tottenham Court Road, is being enlarged.

In the British Embassy Chapel at Constantinople a memorial window to Queen Victoria has been erected.

The London Bridge Widening will increase the width of the footings on either side from 9ft. 5in. to 15ft.—an addition of 139in., which works out at rather more than £700 per inch.

A new Workhouse at Stourbridge is being erected at a cost of £95,000, exclusive of site, furnishing and extras. Accommodation for 646 inmates will be provided. The Guardians are also spending £10,000 on cottage homes for children at Norton.

St. John's College, Battersea.—A further step in the building scheme and remodelling and enlarging of this college has taken place by the erection of a gymnasium designed by the college architect, Mr. A. H. Ryan-Tenison, F.R.I.B.A., of 12, Little College Street, Westminster, S.W. It was opened by Sir Arthur Rücker, Principal of the University of London, on January 18th.

The Engineering Standards Committee has issued a report on the influence of gauge length and section of test bar on the percentage of elongation, by Prof. W. C. Unwin, who prepared it at the instigation of the Committee. The report contains particulars of a large number of tests on sample pieces of bars and plates. The price is 2s. 6d. nett and the publishers are Messrs. Crosby Lockwood, 7, Stationers' Hall Court, Ludgate Hill, E.C.

Lectures at the Carpenters' Hall.—The Carpenters' Company have arranged a series of lectures at their Hall in London Wall on the following Thursdays at 8 p.m.:—February 18th on "Our Atmosphere and its relation to Health," by Prof. Vivian D. Lewes; February 25th, "The Forestry Problem in the United Kingdom," by Prof. W. Schlich, C.I.E.; March 3rd, "The Workman of the Middle Ages," by Mr. C. R. Ashbee; March 10th, "Architectural Development during the Nineteenth Century," by Prof. F. M. Simpson; March 17th, "Canterbury Cathedral," by Prof. R. Elsey Smith; and March 24th, "Development of Methods of Locomotion," by Mr. Basil Mott. Admission will be free by ticket to be obtained at the Hall.

"THE ARCHITECTURAL REVIEW."

WITH the issue for this month THE ARCHITECTURAL REVIEW appears in its enlarged form. Following the policy of the committee in publishing articles of historical and critical research, Mr. Reginald Blomfield contributes a first instalment of his paper on the distinguished architect of the Tuileries, Philibert de l'Orme. Mr. Loftie has a further article on Stamford, very fully illustrated (the inclusion of measured drawings with photographs being noteworthy) and Mr. A. E. Street expresses his views in regard to modern London street architecture. Special attention has been given to current work, Mr. Belcher's "Electra House," a house at Midhurst by Mr. Mervyn Macartney, a Scotch house by Mr. Lorimer, the new public library at Kingston-on-Thames by Mr. Alfred Cox, and some shops and houses in High Street, Oxford, by Mr. E. P. Warren, being illustrated this month. With the number are also given two colour plates of frescoes at Clermont-Ferrand, with a note by the artist, Mr. S. Garston Harvey. Messrs. Prior & Gardner continue their series on mediæval figure sculpture. With so much excellent matter and the numerous illustrations the issue is an admirable one and augurs well for the "Review" in its new form.

Views and Reviews.

Local Government Annual.

"The Local Government Annual and Official Directory for 1904" has just been issued from 27a, Farringdon Street, E.C., price 1s. 6d. Two additions have been made which are not found in any similar compilation. One is the names and addresses of the members of the Metropolitan Water Board; the other is a full list of the various education committees in England and Wales. The directory portion gives the names and addresses of the chief officials of all corporations, London borough councils, county councils, boards of guardians, urban and rural district councils, &c., throughout the kingdom. In addition there is a large quantity of useful information relating to the public libraries, baths and wash-houses, and electric light undertakings in the boroughs of London, and the abstract of the local government legislation of 1903 cannot fail to be of service. The present is the thirteenth year of issue.

Testing Paints.

Messrs. Scott, Greenwood & Co. have made a reputation in the publication of books on paints, oils, varnishes, pigments, glass-staining and allied trades. The present book is a worthy addition to their series. It is written very clearly, and the tests advocated are simple and effective, as they should be if they are to be generally adopted by the trade. The book is not too chemical, but at the same time, without detriment to clearness to the lay reader, problems are gone in to deeply enough to satisfy those possessing a slight knowledge of chemistry. No extraneous matter is introduced, the scope of the volume being rigidly adhered to. It is a model of what a book of the kind should be.

"Simple Methods for Testing Painters' Materials," by A. C. Wright, M.A., B.Sc. London: Scott, Greenwood & Co., 19, Ludgate Hill, E.C., price 5s. nett.

Sciography.

The shadows cast by objects are perhaps the most fruitful source of errors in drawings, very few of which are above reproach in this respect, though they may not be glaringly wrong. The great problem that modern painters and draughtsmen have been and are concerned with is that of lighting, of course chiefly from the colour side. It is comparatively simple to sketch shadows and reflections direct from an object; the difficulty is to "design" them, as it were, a problem requiring extensive study, practice and considerable ability. The representation of architecture, especially, requires exactness, and the science of sciography is a very necessary study for an architectural draughtsman. There are numerous books dealing with the subject, but they are either too abstruse or too elementary in treatment. This present work, though not comprehensive of the whole subject, consists of a series of examples worked out elaborately and with wearying descriptions, which no doubt are useful for the purpose of teaching students how to pass South Kensington examinations, for which in fairness we must state the book is specially published. The usual textbooks on sciography are mostly made up of such problems fully worked out, but it is clearly drawn, self-explanatory illustrations that are wanted, printed if need be in several colours, with a few critical notes on them and a comprehensive and crisp account of the principles of the science and methods of practice. The title of this book is misleading, considering it has no introductory account of principles but consists merely of examples. The drawings are clear and simple as compared with most of its forerunners, however.

"A Text-book of Sciography," by John H. A. McIntyre, M.I.M.E. (Whitworth Scholar), Engineering Master, Allan Glen's School, Glasgow. London: Blackie & Son, Ltd., 50, Old Bailey, E.C., price 3s. 6d.

Dublin Cathedral.

It seems amazing that the thirteenth-century builders should have erected Dublin Cathedral on the marshes of the Poddle River, but St. Patrick's sacred wall left them no choice in the matter: the result, however, has been that the cathedral has suffered frequently from inundations, the level of the water at present being only 7½ ft. below the nave floor. In addition to floods, the fabric has undergone damage by fire, weather and restoration like other cathedrals, though so far as the last is concerned we have only gratitude to Sir Benjamin Guinness and his sons, Lord Ardilaun and Lord Iveagh, through whose patriotic spirit and liberality it has been possible to restore the building to a proper state. At the end of the eighteenth century the transept fell into ruins and remained so for some time; about 1822 it was rebuilt as a parish church, but without regard to the design of the cathedral, this being the work of Archbishop Magee, who was also responsible for some huge galleries which were equally unsightly as they were dangerous to the fabric. A hundred years ago it seems that no part of the building was protected from the weather except the choir, and during the forty years following nothing comprehensive was done towards putting the cathedral in repair. Dean Pakenham made a great effort in 1845-52, and though his measures were only temporary they saved the building from falling to pieces. He made a great mistake, however, in employing soft Caen stone, which has crumbled away, whereas the Somerset oolite used by the thirteenth-century builders was hard and some of it has remained sound to this day. It was not until 1864 that the cathedral was restored to anything like its original appearance, this having been done through the generosity of the great brewer and under the direction of Sir Thomas Drew. The restoration included the removal of the cumbersome Perpendicular window which was erected in 1733 in place of the great west window, and the provision of a three-light Early English design. The tower of the cathedral is a heavy construction, the great work of Archbishop Minot, with a granite spire 101 ft. high: the massive oak floors remained till 1897, when they were replaced by others of iron and concrete.

This book is written by the Dean of St. Patrick's and can be recommended as a concise and accurate account of the building. Like the rest of Messrs. Bell's "Cathedral Series," it is fully illustrated and of a very handy size.

"The Cathedral Church of St. Patrick," by J. H. Bernard, D.D. London: George Bell & Sons, Covent Garden, price 1s. 6d. nett.

Lockwood's Price-Book.

Lockwood's Builder's and Contractor's Price-Book for 1904 has been published, price 4s., and when we say it sustains its reputation we can give no higher commendation. In the preface it is stated that the past year being an uneventful one, with complaints of a general slackness in business, particularly in the metropolis, prices generally have not undergone any great changes. The publishers of the book are Messrs. Crosby Lockwood & Son, 7, Stationers' Hall Court, Ludgate Hill, E.C.

Haddon.

Mr. Cheetham will be known to our readers as a most interesting and accurate writer on architecture. He gets away from the stock guide-book methods, and though he must of necessity have recourse to other authorities he does not go on repeating one man and another like the typical uninformed writer; moreover, he makes careful investigations of his own, and it is these, combined with the general consensus of expert opinion brought under review, which make his writings so valuable. His architectural and

historical notes on Haddon Hall, of which a new edition has now been issued, are just of this nature and can be heartily recommended.

"Architectural and Historical Notes on Haddon Hall," by F. H. Cheetham. Buxton: "High Peak News" Office, price 1s.

Enquiries Answered.

The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

The National Competition.

GLASGOW.—AN EAGER READER writes: "Is it possible to compete for the National prizes for measured work under South Kensington, though one is not in any way connected with them, and if so, from whom can I get particulars?"

We are informed by the Board of Education that only registered students of recognized schools and classes are eligible to submit works for the National Competition, and that the works must be sent by the managers of the school and certified as having been wholly executed by the students whose names they bear.

Arrangement for Share in Architect's Business.

Y. Z. writes: "As an architect with, say, £700 a year clear profit during the last three years, what would be a fair arrangement to take an architect's assistant as partner—at a premium, or a share of the profits, or both?"

The particulars given are entirely insufficient upon which to base a judgment. The best plan would be to submit books and all particulars in confidence to a third party uninterested in the matter, paying him a proper fee as friendly arbitrator. It seems scarcely just to ask a technical paper to give a decision on scanty information gratis, upon a matter in which a fee of twenty guineas would be well earned by a conscientious arbitrator. G. A. T. M.

Extensions to a Room.

NOTTINGHAM.—N. W. writes: "I have to make an extension to a meeting-room 25 ft. long on the first floor, and wish to remove as much of the side wall as possible. Referring to the rough sketch (not reproduced), what minimum-sized beams or girders would be best at A and B, and what size should the pier be; also what would be the cheapest top-lighted form of roof to the 13 ft. 6 in. span? If the new plaster ceiling is gauged work, what precautions should be taken to ensure a good ceiling?"

We cannot be expected to answer such questions as these. You should calculate the sizes of the girders and piers or engage some one to do it for you. An ordinary timber roof with skylights will be the cheapest. The plastering should be two-coat work at least, on laths as ordinarily specified.

Condensation on Walls.

PLAISTOW.—SURVEYOR writes: "We have an office on the first floor communicating with one on the ground floor by means of an open spiral staircase, the walls of both offices being finished with a varnished paper. When the gas or the gas fire is lighted in the lower office, condensation takes place to such an extent on the walls of the upper office as to render it impossible to hang coats on the hooks fixed to the wall for this purpose. What process takes place when the condensation occurs? As is usual in such cases, the trouble is worse on the colder external walls than on the internal walls. Can you suggest a remedy?"

The hydrogen in gas when burnt produces a considerable quantity of water vapour which will condense upon any surface colder than the temperature of the room, such as windows and outside walls. With absorptive material any small amount of moisture is absorbed, but with a waterproof surface such as varnish this does not happen. The remedy is to put in a flue to remove the products of combustion and use distemper or paper on the walls instead of the varnish.

Rooms Partly in Roofs.

LONDON.—H. T. writes: "A by-law states '... he shall construct such room so that it shall not be less in any part than 5ft. in height, and so that it shall be of an average height of 8ft. over the entire area of floor.' Referring to the sketch (not reproduced), inasmuch that the area of the rectangular part of one roof is greater than the other, can the average height of each be said to be different? I take it this is not so, but that, whatever the floor area, if the wall-plate is at 5ft. the highest part of the ceiling must be at least 11ft. in order to average 8ft.; if at 6ft. the highest part must be 10ft., and at 7ft. must be 9ft., and so on."

Yes, the average height would be different in each case. It is found by computing the mean value of the different unequal heights as variously distributed over the whole floor area. In the two instances mentioned the average height is 9ft. 4½ in. for A and 8ft. 9 in. for B. The by-law as quoted by you apparently does not require that the average height of such rooms shall be ascertained by taking the mean proportion of the minimum and maximum heights respectively, but that there shall be a minimum height in every part and an average height over the entire area of the floor. T. E. C.

EALING.—BUILDER writes: "I desire to build a house not exceeding 25ft. high and 30ft. long, and to use the roof-space for bedrooms. The authorities refuse to pass the plans, as I show girt brickwork for the whole height, which they state should be 14 in. thick to the ground and first floors and girt thick for the remainder, but they state that if I do without the rooms in the roof I can build with girt brickwork for the whole. They affirm that rooms in the roof constitute a storey, and must be taken as such. The joists of the attic floor run from back to front and the rooms are lighted by a dormer. Kindly give your opinion."

The rooms proposed to be constructed in the roof constitute a third or topmost storey. Under the Model By-laws the topmost storey is defined as "the uppermost storey in a building, whether constructed wholly or partly in the roof or not, and whether used or constructed or adapted for human habitation or not." The proposed building therefore comprises more than two storeys, and we consider the local authorities are acting strictly within their powers in declining to pass the plans as originally submitted.

T. E. C.

Bankruptcies.

[Abbreviations: R.O.—receiving order; P.E.—public examination; C.C.—county court; O.R.—official receiver; Adj.—Adjudication.]

DURING THE WEEK ending January 29th twenty-nine failures in the building and timber trades in England and Wales were gazetted.

H. BURGESS, builder, Compton. R.O. Jan. 13th.
M. ABRAHAMS, builder, &c., Manor Park. Adj. Jan. 16th.
S. W. HANKINS, builder, Bristol. Adj. Jan. 18th.
J. W. DARBYSHIRE, builder, Ormskirk. Adj. Jan. 21st.
H. W. MELLOR, surveyor, London. R.O. Jan. 22nd.
W. TOMES, builder, Oystermouth. R.O. Jan. 23rd.
S. PARMENTER, builder and contractor, Baintree and Brentwood. R.O. Jan. 20th.

VOLLER & GOODFELLOW, builders and contractors, Wood Green. Liabilities £6,653; assets £480.

S. MARRIOTT, builder and contractor, Woodville, Burton. Liabilities £1,365; assets £644.

S. McKEE & Co., window-glass makers, Pittsburg, U.S.A. Liabilities £55,000.

M'DOWALL & NEILSON, timber merchants, Glasgow. Deficiency £103,000.

WALKER & NORMANTON, architects and surveyors, Leeds. R.O. Jan. 11th.

J. T. MEADS, builder, Grantham. P.E., Nottingham C.C., Feb. 5th, at 10.30.

VINEY & STONE, builders, London, N.W. R.O. Jan. 14th. P.E., Bankruptcy Court, Feb. 23rd, at 11.30.

H. GRIFFITHS, builder, Higher Tranmere. P.E., Birkenhead C.C., March 2nd, at 11.

A. J. DALE, architect and surveyor, St. George. R.O. Jan. 13th.

C. REDHEAD & Co., timber merchant, Waterloo, Bootle. R.O. Jan. 18th.

M. LOVELOCK, builder, Bellinger, near Andover. P.E., Bankruptcy Court, Feb. 26th, at 12.

F. E. PEARSON, builder and contractor, Rotherham. R.O. Jan. 18th.

J. SCOTT, builder, York. R.O. Jan. 21st. First meeting. O.R.'s, York, Feb. 5th, at 3.30. P.E., York Courts of Justice, Feb. 5th, at 11.

W. CHATE, contractor, Brighton. First meeting, 4, Pavilion Buildings, Brighton, Feb. 11th, at 10.45. P.E., Brighton C.C., Feb. 11th, at 11.

ASPHALTIC LIMESTONE CONCRETE CO., LTD., Birmingham. Gross liabilities £14,720; £2,291 expected to rank for dividend; assets £5; deficiency £2,286.

H. HAINES, joiner and builder, Nottingham. Gross liabilities £842; £795 expected to rank; assets £133 11s.; deficiency £668.

E. WALDEN, builder, Hurst. Gross liabilities £1,882; £1,784 expected to rank for dividend; assets £430; deficiency £1,354.

R. ROBERTS, builder, Hurstead, near Rochdale. First meeting, Town Hall, Rochdale, Jan. 29th, at 11.15. P.E., Rochdale Lecture Hall, Feb. 19th, at 11.30.

ROGERS & Co., builders, London, W. First meeting, Bankruptcy Court, Feb. 5th, at 2.30. P.E., Bankruptcy Court, March 1st, at 12.

S. S. WHERLY, architect and surveyor, Wark-on-Tyne. R.O. Jan. 18th. First meeting, O.R.'s. Newcastle-on-Tyne, Feb. 3rd, at 11.30. P.E., Newcastle-on-Tyne C.C., Feb. 11th, at 11.

W. SMITH & Son, builders and contractors, Wolverhampton. Gross liabilities 14,446; £1,803 expected to rank for dividend; assets £1,799; deficiency £4. R.O. Jan. 7th. P.E., Wolverhampton C.C., Feb. 3rd, at 11.

Coming Events.

Wednesday, February 3.

SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part I.).—Mr. E. J. Steegmann, M.B., on "Elementary Physics," at 7 p.m.

ROYAL ARCHAEOLOGICAL INSTITUTE.—Rev. J. C. Cox, F.S.A., on "The College of Fotheringay from Original Documents," at 4 p.m.

BUILDERS' FOREMEN AND CLERKS OF WORKS' INSTITUTION.—Ordinary Meeting at 8 p.m.

NORTHERN ARCHITECTURAL ASSOCIATION.—Students' Evening.

INSTITUTION OF CIVIL ENGINEERS.—Students' Visit to the Plumstead Electricity and Destructor Station, at 2.30 p.m.

INSTITUTE OF SANITARY ENGINEERS.—Meetings of General Purposes and Finance Committee at 4 p.m., Election Committee at 5.15 p.m., and Members' Sessional Meeting at 7 p.m. Mr. S. L. Bartholomew on "Underground Conveniences."

Thursday, February 4.

SOCIETY FOR THE ENCOURAGEMENT OF THE FINE ARTS.—Mr. H. Beaumont on "Chârtres and its Cathedral," at 8 p.m.

SOCIETY OF ANTIQUARIES.—Meeting at 8.30 p.m.

Friday, February 5.

ARCHITECTURAL ASSOCIATION.—Mr. W. A. Harvey on "Cottage Homes," at 7.30 p.m.

JUNIOR INSTITUTION OF ENGINEERS.—Mr. Hal Williams on "Producer Gas Factory, Cold Stores and Freezing Works."

SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part I.).—Mr. E. J. Steegmann, M.B., on "Elementary Chemistry," at 7 p.m.

COMPETITION REFORM SOCIETY.—Annual General Meeting, at 9, Conduit Street, at 6 p.m.

Saturday, February 6.

GLASGOW TECHNICAL COLLEGE SCIENTIFIC SOCIETY.—Twelfth Anniversary Dinner.

SANITARY INSPECTORS' ASSOCIATION.—Twenty-first Annual Dinner at Venetian Chamber, Holborn Restaurant, at 6.30 p.m.

INCORPORATED BRITISH INSTITUTE OF CERTIFIED CARPENTERS.—Meeting at Carpenters' Hall, E.C. Mr. W. Middleton opens discussion on "Failures in Carpentry and Joinery," at 6 p.m.

ARCHITECTURAL ASSOCIATION.—Second Spring Visit.

SANITARY INSTITUTE (Inspections and Demonstrations for Sanitary Officers, Part I.).—Inspection and Demonstration at Charing Cross Hospital New Buildings at 2.15 p.m., conducted by Mr. Alfred Saxon Snell, F.R.I.B.A.

ROYAL INSTITUTION.—Dr. Charles Waldstein on "The Study of Style in Greek Sculpture," at 3 p.m.

Monday, February 8.

ROYAL PHILOSOPHICAL SOCIETY OF GLASGOW (Architectural Section).—Mr. J. Maurice Arthur on "Legal Points relative to Buildings," at 8 p.m.

INSTITUTE OF MECHANICAL ENGINEERS (Graduates' Lecture).—Mr. William H. Merrett, A.R.S.M., on "The Work of the Alloys Research Committee."

SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part I.).—Mr. E. J. Steegmann, M.B., on "Elementary Chemistry," at 7 p.m.

SURVEYOR'S INSTITUTION.—Ordinary General Meeting, at 8 p.m.

ROYAL ACADEMY.—Mr. W. R. Colton, A.R.A., on "Enthusiasm in the Pursuit of Sculpture," at 4 p.m.

INSTITUTE OF SANITARY ENGINEERS.—Meeting of Organizing Committee, at 6 p.m.

Tuesday, February 9.

INSTITUTE OF SANITARY ENGINEERS (Lectures in Practical Sanitary Science).—Mr. J. Priestley on "Sanitary Law," at 7 p.m.

ARCHITECTURAL ASSOCIATION OF IRELAND.—Mr. Frederick G. Hicks on "Reminiscences of York," at 8 p.m.

Wednesday, February 10.

SANITARY INSTITUTE.—Discussion on "Road Sanitation," to be opened by Mr. J. Patten Barber, M.I.C.E., and Louis C. Parkes, M.D., at 8 p.m.

GLASGOW ARCHITECTURAL ASSOCIATION.—Mr. James A. Morris on "The Planning of a Small House," at 8 p.m.

EDINBURGH ARCHITECTURAL ASSOCIATION (Associates' Section).—Mr. Charles Mackie, A.R.S.A., on "Common Sense in Art," at 8 p.m.

NORTHERN ARCHITECTURAL ASSOCIATION.—Mr. W. H. Wood on "Fifteenth-Century Architecture," at 7.30 p.m.

Current Market Prices.

£ s. d. £ s. d.

OILS AND PAINTS.

Castor Oil, French	.. per cwt.	1	0	5	—
Colza Oil, English	.. do.	1	3	6	—
Lard Oil	.. per cwt.	2	15	0	2
Lead, white, ground, carbamate	.. do.	1	4	10	—
Do, red	.. do.	1	0	4½	—
Linseed Oil, barrels	.. do.	0	17	1½	—

METALS.

Copper, sheet, strong	.. per ton	73	0	0	—
Iron, Staffs, bar	.. do.	6	8	0	8
Do. Galvanised Corrugated sheet	.. do.	10	7	6	10
Lead, pig, Soft Foreign	.. do.	11	7	6	11
Do. do. English common brands	.. do.	11	17	6	12
Do. sheet English 3lb. per sq. ft. and upwards	.. do.	14	0	0	—
Do. pipe	.. do.	15	0	0	—
Steel, Staffs, Girders and Angles	.. do.	5	10	0	6
Zinc, sheets, Silesian	.. do.	24	5	0	—

TIMBER.

SOFT WOODS.

Fir, Dantzic and Memel	per load	1	13	0	3
Pine, Quebec, Yellow	.. do.	5	5	0	6
Do. Pitch	.. do.	2	11	0	2
Laths, log, Dantzic	.. per fath.	4	10	0	5
Do. Norrköping	.. per bundle	0	0	7½	—
Deals, Umba, Yellow, and	3x11 per std.	16	5	0	—

Do. Skellefteå, Yellow, Unsorted, 3x8	do.	9	0	0	—
Do. Oserko, Yellow, 4th, 3x9	do.	8	0	0	—
Do. Sundsvall, Yellow, 4th, 3x11	do.	9	0	0	—
Do. do. do. 3x7	do.	8	5	0	—
Do. do. Yellow, 5th, 3x9	do.	8	15	0	—
Do. Söderhamn, Yellow, 3rd, 4x9	do.	16	5	0	—
Do. do. do. 3x9	do.	15	15	0	16
Do. Keret, Yellow, 3rd, 3x11	do.	9	10	0	—

Do. Nederkalix, Yellow, 1st, 4x11	do.	14	10	0	—
Do. do. do. 4x7	do.	11	5	0	—
Do. do. do. 3x7	do.	10	10	0	—
Do. Soroka, Yellow, 5th, 3x11	do.	6	0	0	—
Do. Archangel, Yellow, 3rd, 3x11	do.	10	15	0	—
Do. do. do. 3x9	do.	11	5	0	—
Do. do. White, 1st, 3x9	do.	10	15	0	11

Do. Pentecost, Bright Spruce, Unsorted, 3x9	do.	8	5	0	—
Do. St. Petersburg, White, 1st, 3x11	do.	9	5	0	—
Do. do. do. 3x10	do.	8	5	0	—
Do. do. do. 2nd, 3x11	do.	8	0	0	—
Do. do. Yellow, 1st, 3x11	do.	15	0	0	—
Do. do. do. 3x9	do.	13	0	0	—
Do. do. do. 2nd, 3x9	do.	11	10	0	—
Do. do. do. 3rd, 3x11	do.	7	15	0	8
Do. do. do. 3x10	do.	8	0	0	—
Do. do. do. 3x9	do.	9	0	0	—

Do. Quebec Spruce, 1st, 3x11	do.	12	0	0	—
Do. do. do. 2nd, 3x9	do.	10	5	0	—
Do. do. Bright Pine, 3rd, 3x10	do.	10	10	0	—
Do. do. do. 3x7	do.	10	10	0	—
Do. St. John's N.B. Bright Spruce, 1st, 2nd & 3rd Unsorted, 3x11	do.	8	5	0	—
Battens, all kinds	.. do.	6	5	0	12
Scantlings	.. do.	6	1½	0	9

Flooring Boards 1 in. prepared, 1st	.. per square	0	10	6	10
Do. 2nd	.. do.	0	11	0	—
Do. 3rd, &c.	.. do.	0	6	9	0

Complete List of Contracs Open.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
BUILDING:			
Feb. 4	Blairgowrie, Scotland—Auction Mart	M'Kinnon & Doeg	W. J. B. Grant, Architect, Bengarth, Blairgowrie.
" 4	Bradford—Eight Houses	—	W. Rycroft, Architect, Bank Buildings, Manchester Rd., Bradford.
" 4	Herne Hill—Church	—	J. W. Stevens, 21 New Bridge Street, E.C.
" 4	Camelsdale, near Haslemere—School	West Sussex Education Com- mittee.	J. H. Howard, Architect, Lower Street, Haslemere.
" 4	Durham—Six Houses	Co-operative Society Ltd. ..	G. Ord, 16 The Avenue, Durham.
" 4	Hastings—Building and Drainage Works	Guardians	A. W. Jeffrey & Son, 5 Havelock Road, Hastings.
" 4	Newport, Mon.—Renewing, &c., Showboards	Corporation	Borough Engineer, Town Hall, Newport, Mon.
" 4	Lockwood, Huddersfield—Four Houses	—	J. B. Abbey & Son, New Street, Huddersfield.
" 4	Hampstead—Wall at the Cemetery	Borough Council	A. P. Johnson, Town Clerk, Town Hall, Haverstock Hill, N.W.
" 4	Bethnal Green, E.—Stabling and Disinfecting Station	Borough Council	R. Voss, junr., Town Clerk, Town Hall, Bethnal Green, E.
" 4	Barnstable—Alterations and Additions to Workhouse	Guardians	W. C. Oliver, Architect, Barnstable.
" 5	Halifax—School	Trustees	A. G. Dalzell, 15 Commercial Street, Halifax.
" 5	Slaitwaite, Yorks—Residence	—	Lunn & Kaye, Architects, Milnsbridge.
" 5	London, E.—Additional Building at Workhouse	Whitechapel Gurdians	F. J. Tootell, 71 Vallance Road, Whitechapel, N.E.
" 6	Lancaster, Durham—Additions to Workhouse	Guardians	Newcombe & Newcombe, 89 Pilgrim St., Newcastle-upon-Tyne.
" 6	Egremont, Cheshire—Lime	Urban District Council	W. H. Travers, District Surveyor, Public Offices, Egremont.
" 6	Moira—Alterations and Repairs to the Manse	—	W. W. Larmor, A.M.I.C.E. Banbridge.
" 6	Rathmurd—Cemetery Works	Joint Burial Board	F. W. MacPhail, Clerk, Town Hall, Wicklow.
" 6	Knowle, near Fareham—Additional Drying-Room	—	J. R. Wyatt, Clerk, County Asylum, Knowle, near Fareham.
" 6	Egremont, Cheshire—Cement	Urban District Council	W. H. Travers, District Surveyor, Public Offices, Egremont Cheshire.
" 6	Boscawell—Renovation of Church	—	V. O. Smith, Secretary, Post Office, Boscawell.
" 8	Alnwick—Rebuilding Bridge	Rural District Council	H. W. Walton, Clerk, Alnwick.
" 8	Kingston-upon-Thames—Alteration to Engine-room	Guardians	W. H. Hope, Architect, Seymour Road, Hampton Wick.
" 8	Dartford—Ward, Laundry, &c.	Joint Hospital Committee ..	R. Marchant, 28 Theobald's Road, London, W.C.
" 8	Belfast—Extension of Shed	Harbour Commissioners	G. F. L. Giles, Harbour Engineer, Belfast.
" 8	Ryton, Norfolk—Extending, &c., Wall	Parish Council	J. Kemp, Rulton Mill, Cromer.
" 9	Hellingly, Sussex—Alterations, &c., to Workhouse	Guardians	Mitchell & Ford, 7 Gildredge Road, Eastbourne.
" 9	Southampton—Additions to Offices	Corporation	Borough Engineer, Market Chambers, Southampton.
" 9	London, W.—Lime, Cement, Bricks, &c.	Kensington Borough Council ..	W. C. Leete, Town Clerk, Kensington.
" 9	Tyburn, near Birmingham—Bricks, Copings, Tiles, &c.	Tame and Rea District Drainage Board.	J. D. Watson, Engineer, Board's Offices, Tyburn, near Birmingham.
" 9	Holywell, Flint—Alterations, &c., to Chapel	—	T. G. Williams, 52 South Castle Street, Liverpool.
" 9	Hailsham—Alterations, &c., to Workhouse	Guardians	Mitchell & Ford, 7 Gildredge Road, Eastbourne.
" 10	Saintfield, co. Down—Residence and Business Premises	—	Hobart & Heron, Architects, Dromore, co. Down.
" 10	Harrington, Cumberland—Alterations, &c., to Stores	Co-operative Society	C. W. Eaglesfield, Architect, Gordon Street, Workington.
" 10	Birkenhead—Bricks, Cement, Lime, &c.	Corporation	C. Brownridge, Borough Surveyor, Town Hall, Birkenhead.
" 10	Bury, Lancs—Cement	Streets Committee	A. W. Bradley, Borough Engineer, Bank Street, Bury, Lancs.
" 10	Battersea, S.W.—Bricks, Cement, Lime, Slates, &c.	Borough Council	W. M. Wilkins, Town Clerk, Town Hall, Lavender Hill, S.W.
" 10	Belfast—Church	Baptist Church Committee ..	J. A. Hanna, 102 Donegal Street, Belfast.
" 11	Glasgow—Extension of Generating Station	Corporation	W. A. Chamen, 75 Waterloo Street, Glasgow.
" 11	London, S.E.—Cement and Lime	Lewisham Borough Council ..	Surveyor, Town Hall, Catford.
" 11	West Ham—Slates, Lime, Cement, &c.	Borough Council	Borough Engineer, Town Hall, Stratford, E.
" 12	St. Leonards, Sussex—Coastguard Station	—	Director of Works Dept., Admiralty, 21 Northumberland Av., W.C.
" 12	Tirphill—Thirty-three Houses	Graig-Rhymney Club	T. Roderick, Architect, Glebehead, Merthyr Tydfil.
" 12	Nerley, Hants—Houses	—	Superintending Engineer, H.M. Dockyard, Portsmouth.
" 13	Richmond, Surrey—Cement, &c.	Town Council	J. H. Brierley, Borough Surveyor, Town Hall, Richmond, Surrey.
" 13	Whitley Bay, Northumberland—Conveniences	Urban District Council	J. P. Spencer, 30 Howard Street, North Shields.
" 15	Northwich—Building Materials	Weaver Trustees	J. A. Sauer, Engineer, Weaver Navigation, Northwich.
" 16	Naas—Town Hall, &c.	Urban District Council	M. Gogarty, Clerk, Town Hall, Naas.
" 16	Nelson, Lancs—Lime	Gas Committee	A. J. Hope, Engineer, Gasworks, Nelson.
" 16	Edmonton—Workshop	School Board	J. Moule, Clerk, School Board Offices, Brettenham Road, Upper Edmonton.
" 17	Manchester—Fire Station	Watch Committee	W. Windsor, 37 Brown Street, Manchester.
" 17	London, W.—Cement	Chiswick U.D.C.	J. Barclay, Surveyor, Town Hall, Chiswick.
" 17	Leeds—Wooden Shelter	—	City Engineer, Leeds.
" 17	Chislehurst—Public Baths	Urban District Council	J. Barclay, Surveyor, Town Hall, Chiswick.
" 17	Folkestone—Cement	Corporation	A. E. Nichols, Borough Surveyor, Corporation Offices, Folkestone.
" 20	Plymouth—Cement	Corporation	J. Paton, Borough Surveyor, Municipal Offices, Plymouth.
" 20	Reading—Hospital	County Council	C. Smith & Son, 164 Friar Street, Reading.
" 20	Bangor, Wales—Workmen's Houses	City Council	J. Gill, City Surveyor, Town Hall, Bangor, Wales.
ENGINEERING:			
Feb. 4	Salford—Retort Stoking Machinery, &c.	Gas Committee	W. W. Woodward, Engineer, Gas Offices, Bloom Street, Salford.
" 4	Abergavenny—Regenerative Retorts	Gas Committee	H. Russell, Gasworks, Abergavenny.
" 4	East Stonehouse, Devon—Landing Stage	Urban District Council	F. A. Wiblin, Town Hall, East Stonehouse.
" 6	Carnock Colliery, Scotland—Shafts	—	Alloa Coal Co. Ltd., Alloa.
" 6	Trim, Ireland—Concrete and Steel Bridge	Meath County Council	H. J. Cullen, Secretary, Navan.
" 7	Blackburn—Steam Bakery Equipment	Guardians	F. C. Ruddle, 4 King Street, Blackburn.
" 8	Brighton—Electric Crane	Town Council	F. J. Tillstone, Town Clerk, Town Hall, Brighton.
" 8	Canterbury—Motor-driven Centrifugal Pumps	Drainage Committee	C. A. Blasehek, City Electrical Engineer, Canterbury.
" 8	London, N.—Electric Plant	Hornsey U.D.C.	R. Hammond, 64 Victoria Street, Westminster, S.W.
" 9	London—Railway Turntables	London County Council	Clerk, County Hall, Spring Gardens, S.W.
" 10	Londonderry—Heating Apparatus	County Council	T. B. Adams, Secretary, County Courthouse, Londonderry.
" 11	West Ham—Electrical Stores	Borough Council	Boro' Engnr., Centr. Electricity Station, Abbey Mills, West Ham.
" 15	Bristol—Swingbridge	Docks Committee	W. W. Squire, Engnr., Engineer's Office, Cumberland Rd., Bristol.
" 15	Bristol—Calsson	Docks Committee	W. W. Squire, Engnr., Engineer's Office, Cumberland Rd., Bristol.
" 15	Bristol—Lock Gates	Docks Committee	W. W. Squire, Engnr., Engineer's Office, Cumberland Rd., Bristol.
" 15	Blue Anchor, near Watchet, Somerset—Extension of Sea Defence Works.	County Council	Sir J. W. Barry & Partners, 21 Delahay Street, Westminster, S.W.
" 15	Manchester—Hydraulic Goods Lift	Markets Committee	City Surveyor, Town Hall, Manchester.
" 15	Sheffield—Heating Apparatus	Education Committee	W. J. Hale, 13 St. James's Row, Sheffield.
" 18	Manchester—Asphalt Work	Dock and Warehouse Extension Co., Ltd.	W. Hunter, 41 Spring Gardens, Manchester.
" 19	Londonderry—Sinking Well	District Lunatic Asylum ..	M. A. Robinson, Richmond Street, Londonderry.
" 20	Newburgh, Scotland—Filters	Town Council	W. D. Sang & Lockhart, Kirkcaldy.
" 20	Chelmsford—Engine, &c.	—	Borough Surveyor, 16 London Road, Chelmsford.
" 22	Edinburgh—Engine and Dynamo	Lord Provost	Resident Electrical Engineer, Dewar Place Station, Edinburgh.
" 22	Hanley—Electric Lighting Plant	Corporation	C. A. Cowell, Corporation Electrical Engineer, Electricity Works, Park Road, Hanley.
" 24	London, N.—Conduits and Mains	Islington Borough Council ..	Borough Electrical Engineer, 50 Eden Grove, Holloway, N.
FURNITURE:			
Feb. 5	Kilmallock, Ireland—Bedsteads, &c.	Guardians	P. J. Coll, Clerk, Board Room, Workhouse, Kilmallock.
" 6	Plymouth—Desks, &c.	Education Authority	E. C. Cook, 18 Princess Square, Plymouth.
" 15	West Ham—Furniture	Borough Council	W. Jacques, 2 Fen Court, Fenchurch Street, E.C.
IRON AND STEEL:			
Feb. 4	London, E.C.—Steel and Iron-work	Corporation of Trinity House ..	E. P. Edwards, Secretary, Trinity House, London, E.C.
" 5	Hastings—Fencing	Corporation	P. H. Palmer, Borough Engineer, Town Hall, Hastings.
" 8	Egremont, Cheshire—Iron and Steel	Urban District Council	W. H. Travers, District Engnr., Public Offices Egremont, Cheshire.
" 8	Manchester—Ventilating Grids, &c.	Corporation	H. Prescott, House Drainage Dept., Town Hall, Manchester.
" 8	Wordsley—Manholes, &c.	Kingswinford R.D.C.	W. Fiddian, Old Bank Offices, Stourbridge.
" 8	Wordsley—Pipes	Kingswinford R.D.C.	W. Fiddian, Old Bank Offices, Stourbridge.
" 9	London, W.—Iron Goods, &c.	Kensington Borough Council ..	W. C. Leete, Town Clerk, Kensington.
" 9	Tyburn, near Birmingham—Iron and Steel	Tame & Rea Dist. Drainage Bd. Corporation	J. D. Watson, Engineer, Board's Offices, Tyburn, near Birmingham.
" 10	Birkenhead—Stores	Streets Committee	C. Brownridge, Borough Engineer, Town Hall, Birkenhead.
" 10	Bury, Lancs—Stores	Borough Council	A. W. Bradley, Borough Engineer, Bank Street, Bury, Lancs.
" 10	Battersea, S.W.—Ironmongery, &c.	Borough Council	W. M. Wilkins, Town Clerk, Town Hall, Lavender Hill, S.W.
" 11	West Ham—Ironmongery, &c.	Borough Council	Borough Engineer, Town Hall, Stratford, E.
" 11	London, S.E.—Ironwork	Lewisham Borough Council ..	Surveyor, Town Hall, Catford.
" 12	Leeds—Fencing	—	City Engineer, Leeds.
" 12	Belfast—Railway Stores	County Down Railway Co. ..	T. J. Brittain, Secretary, Queen's Quay Terminus, Belfast.

Complete List of Contracts Open — continued.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
IRON AND STEEL—cont.			
Feb. 15	Northwich—Ironmongery	Weaver Trustees	J. A. Sauer, Engineer, Weaver Navigation, Northwich
" 16	Sheffield—Heating Apparatus	Education Committee	W. J. Hall, 13 St. James's Row, Sheffield.
" 16	Nelson, Lancs.—Ironmongery	Gas Committee	A. J. Hope, Engineer, Gasworks, Nelson.
" 17	London, W.—Ironmongery, &c.	Chiswick U.D.C.	J. Barclay, Surveyor, Town Hall, Chiswick.
" 17	Folkestone—Iron and Ironmongery	Corporation	A. E. Nichols, Borough Surveyor, Corporation Offices, Folkestone.
" 20	Plymouth—Iron, Steel, Bolts and Nuts, &c.	Corporation	J. Paton, Borough Surveyor, Municipal Offices, Plymouth.
" 22	London, N.—Iron and Steel	Hornsey U.D.C.	E. J. Lovegrove, Borough Engineer, Municipal Offices, Southwood Lane, Highgate, N.
PAINTING AND PLUMBING:			
Feb. 8	Manchester—Painting	Lancs & Yorks Railway Co	Engineer's Office, Hunt's Bank, Manchester.
" 8	Manchester—Plumbers' Work	Corporation	H. Prescott, House Drainage Dept., Town Hall, Manchester.
" 9	Letterkenny, Donegal—Plumbing Work	District Lunatic Asylum	J. P. M'Grath, Archt., Commercial Bldgs., Foyle St., Londonderry.
" 9	Tyburn, near Birmingham—Oils, Paints, &c.	Tame & Rea Dist. Drainage Bd	J. D. Watson, Engineer, Board's Offices, Tyburn, near Birmingham.
" 10	Bury, Lancs—Oils, Paints, &c.	Streets Committee	A. W. Bradley, Borough Engineer, Bank Street, Bury, Lancs.
" 11	London, S.E.—Paints, &c.	Lewisham Borough Council	Surveyor, Town Hall, Catford.
" 11	West Ham—Oils, Colours, Brushes, &c.	Borough Council	Borough Engineer, Town Hall, Stratford, E.
" 15	Northwich—Paints, Varnishes, &c.	Weaver Trustees	J. A. Sauer, Engineer, Weaver Navigation, Northwich.
" 17	Folkestone—Paint, Varnish, Glass, &c.	Corporation	A. E. Nichols, Borough Surveyor, Corporation Offices, Folkestone.
" 20	Plymouth—Paint, Glass, &c.	Corporation	J. Paton, Borough Surveyor, Municipal Offices, Plymouth.
" 25	Mickleover, Derby—Painting	County Asylum Committee	Mr. McWilliams, Engineer, County Asylum, Derby.
No date	Bethnal Green—Plumbing Work		Clerk of Works, Artizans' Dwellings, Barnsley St., Bethnal Green.
ROADS AND CARTAGE:			
Feb. 4	Isle of Ely—Materials	County Council	H. F. Simpson, County Surveyor, Northern Division, Wisbech.
" 4	Southend-on-Sea—Wood Paving	Corporation	E. J. Elford, Borough Engineer, Southend.
" 4	Ormskirk—Paving, &c.	West Lancashire R.D.C.	C. Law Green, Chief Surveyor, Wigan Road, Ormskirk.
" 4	Ormskirk—Materials	West Lancashire R.D.C.	C. Law-Green, Chief Surveyor, Wigan Road, Ormskirk.
" 6	Egremont, Cheshire—Granite Chippings	Wallasey U.D.C.	W. H. Travers, Dist. Surveyor, Public Offices, Egremont, Cheshire.
" 6	Chelmsford—Materials	Essex C.C.	P. J. Sheldon, Chief Surveyor, Chelmsford.
" 8	Haslemere, Surrey—Making-up	Hambleton R.D.C.	F. Smallpiece, 138 High Street, Guildford.
" 8	Hinckley—Materials	Urban District Council	E. H. Crump, Surveyor, Town Hall, Hinckley.
" 8	Buckhurst Hill, Essex—Making-up	Urban District Council	H. Tooley, Surveyor, Town Hall, Buckhurst Hill.
" 8	London, S.E.—Kerbing, &c.	Lewisham Borough Council	Surveyor, Town Hall, Catford.
" 9	London, W.—Granite	Kensington Borough Council	W. C. Leete, Town Clerk, Town Hall, Kensington.
" 9	Lutterworth—Granite, &c.	Rural District Council	J. B. Holroyd, District Surveyor, Lutterworth.
" 9	Shoeburyness—Making-up	Urban District Council	H. Harris, Surveyor, Clarence Chambers, Southend-on-Sea.
" 10	Birkenhead—Materials	Corporation	C. Brownridge, Borough Surveyor, Town Hall, Birkenhead.
" 10	London, S.W.—Cleansing and Watering	Crown Estate Paving Commissioners	Lodge, Park Square West, Regent's Park.
" 10	Smallburgh, Norfolk—Materials	Rural District Council	W. L. Lewis, District Surveyor, Stalham.
" 10	Bury, Lancs—Setts, Kerb, &c.	Streets Committee	A. W. Bradley, Borough Engineer, Bank Street, Bury, Lancs.
" 10	Battersea, S.W.—Granite and Stone	Borough Council	W. M. Wilkins, Town Clerk, Town Hall, Lavender Hill, S.W.
" 11	West Ham—Paving Materials	Borough Council	Borough Engineer, Central Elec. Sta., Abbey Mills, West Ham, E.
" 11	London, S.E.—Road Materials	Lewisham Borough Council	Surveyor, Town Hall, Catford.
" 11	Worship—Slag	Urban District Council	G. H. Featherston, Clerk, Town Hall, Worksope.
" 12	Wisbech—Materials	Rural District Council	G. Carrick, 13 South Brink, Wisbech.
" 13	Richmond, Surrey—Road Materials	Town Council	J. H. Brierley, Borough Surveyor, Town Hall, Richmond.
" 13	Bedford—Materials, &c.	County Council	County Surveyor, Shirehall, Bedford.
" 15	Essex—Broken Granite	County Council	P. J. Sheldon, Chief Surveyor, Chemsford.
" 16	London, E.C.—Paving	Shoreditch Borough Council	J. R. Dixon, Borough Surveyor, Town Hall, Old Street, E.C.
" 16	London, N.—Roads and Sewers	County Council	Housing of Working Classes Section, Architect's Department 19 Charing Cross Road, W.C.
" 16	Long Sutton, Lincs—Granite, &c.	Urban District Council	S. S. Mossop, Clerk, Long Sutton, Lincolnshire.
" 17	Folkestone—Granite Kerb and Channel	Corporation	A. E. Nichols, Borough Surveyor, Corporation Offices, Folkestone.
" 17	London, W.—Materials	Chiswick U.D.C.	J. Barclay, Surveyor, Town Hall, Chiswick.
" 18	East Retford—Granite	Corporation	J. D. Kennedy, Borough Surveyor, East Retford.
" 22	Culham, Abingdon—Granite	Rural District Council	B. Challenor, 59 Stert Street, Abingdon.
" 22	London, N.—Road Materials	Hornsey U.D.C.	E. J. Lovegrove, Municipal Offices, Southwood Lane, Highgate, N.
SANITARY:			
Feb. 4	Blaydon-on-Tyne—Scavenging	Urban District Council	R. Biggins, Sanitary Inspector, Blaydon-on-Tyne.
" 4	Ramsbottom, Lancs—Sewer	Urban District Council	J. Diggle, Civil Engineer, Hind Hill Street, Heywood.
" 6	Abersychan, Wales—Sewer	Urban District Council	W. H. V. Bythway, Clerk, Pontypool.
" 6	Egremont, Cheshire—Drain and Sewer Pipes	Wallasey U.D.C.	W. H. Travers, Dist. Surveyor, Public Offices, Egremont, Cheshire.
" 8	Manchester—House Drainage Work	Corporation	H. Prescott, Mgr., House Drainage Dept., Town Hall, Manchester.
" 9	London, W.—Drain Pipes, &c.	Kensington Borough Council	W. C. Leete, Town Clerk, Town Hall, Kensington.
" 9	Tyburn, near Birmingham—Stoneware Pipes, &c.	Tame and Rea District Drainage Board	J. D. Watson, Board's Offices, Tyburn, near Birmingham.
" 10	Bury, Lancs—Sewer Grids, &c.	Streets Committee	A. W. Bradley, Borough Engineer, Bank Street, Bury, Lancs.
" 10	Birkenhead—Stoneware Pipes	Corporation	C. Brownridge, Borough Engineer, Town Hall, Birkenhead.
" 10	Battersea—Stoneware Pipes	Borough Council	W. M. Wilkins, Town Clerk, Town Hall, Lavender Hill, S.W.
" 10	Horsham—Sewerage Works	Urban District Council	S. Mitchell, Clerk, Market Square, Horsham.
" 11	West Ham—Stoneware Pipes, Disinfectants, &c.	Borough Council	Borough Engineer, Town Hall, Stratford, E.
" 11	London, S.E.—Sewerage Jobbing Works	Lewisham Borough Council	Surveyor, Town Hall, Catford.
" 15	Basford, Nottingham—Sewerage and Sewage-disposal Works	Rural District Council	Sands, Walker & S. Maylan, Milton Chbrs., Milton St., Nottingham.
" 16	Wellington, Somerset—Sewers	Urban District Council	C. J. Lomax, 37 Cross Street, Manchester.
" 17	London, W.—Disinfectants	Chiswick U.D.C.	J. Barclay, Surveyor, Town Hall, Chiswick.
" 20	Plymouth—Sanitary Fluid	Corporation	J. Paton, Borough Surveyor, Municipal Offices, Plymouth.
" 22	London, N.—Sewer and Drainage Work	Hornsey U.D.C.	E. J. Lovegrove, Municipal Offices, Southwood Lane, Highgate, N.
TIMBER:			
Feb. 4	London, S.E.—Timber	Lambeth Borough Council	H. Edwards, 346 Kennington Road, S.E.
" 9	London, W.—Timber	Kensington Borough Council	W. C. Leete, Town Clerk, Kensington.
" 9	Tyburn, near Birmingham—Timber	Tame and Rea District Drainage Board	J. D. Watson, Board's Offices, Tyburn, near Birmingham.
" 9	Bury, Lancs—Timber	Streets Committee	A. W. Bradley, Borough Engineer, Town Hall, Bury, Lancs.
" 10	Battersea—S.W.—Timber	Borough Council	W. M. Wilkins, Town Clerk, Town Hall, Lavender Hill, S.W.
" 11	West Ham—Timber	Borough Council	Borough Engineer, Town Hall, Stratford, E.
" 11	London, S.E.—Timber	Lewisham Borough Council	Surveyor, Town Hall, Catford.
" 16	London, N.—Sleepers	Gt. Northern Rly. Co.	Engineer, King's Cross Station, London.
" 17	Folkestone—Timber	Corporation	A. E. Nichols, Borough Surveyor, Corporation Offices, Folkestone.

List of Competitions Open.

DATE OF DELIVERY.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	DEPOSIT REQUIRED FOR CONDITIONS, &c.	BY WHOM ADVERTISED.
Feb. 20	Bangor—Workmen's Houses	£21, £10 10s.	—	J. Gill, City Surveyor, Bangor.
Mar. 1	Ilkley—Free Library, &c.	£100, £50, £20.	£1 1s.	F. Hall, Clerk, Council Offices, Ilkley.
" 1	Stockton-on-Tees—Enlargement of Chancel		£1 1s.	Holy Trinity Vicarage, Stockton-on-Tees.
" 31	St. Helens—Two Branch Public Libraries	£20, £40.	£1 1s.	W. H. Andrew, Town Clerk, Town Hall, St. Helens.
" 31	Vienna—Machinery to Lift Boats on Canal	100,000, 75,000 & 50,000 Kronen.	—	Austro-Hungarian Consulate-General, 22 Laurence Pountney Lane, E.C.
April 30	Newcastle-upon-Tyne—Grammar School	£100, £50, £25.	£1 1s.	H. J. Criddle, 2 Collingwood Street, Newcastle-upon-Tyne.
No date	Torquay—Public Library	£52 10s., £31 10s.	—	F. S. Hex, Town Clerk, Town Hall, Torquay.
"	Haverfordwest—Meat Market	£21.	—	R. T. P. Williams, Town Clerk, Haverfordwest.

Tenders.

Information from accredited sources should be sent to "The Editor" at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Addressed postcards on which lists of tenders may be stated will be sent post free on application to the Manager, BUILDERS' JOURNAL, 6, Great New Street, Fetter Lane, E.C.4.

Abercarn (Mon.).—For the erection of urban council offices, fire-brigade station, &c., for the Abercarn U.D.C. Mr. John Williams, engineer and surveyor:—

Charles & Co.	£1,385
Davies Brothers, Abercarn	1,346
C. H. Reed	1,300
A. S. Morgan & Co.	1,300
D. W. Richards & Co.	1,238

* Accepted. [Rest of Newport]

Birmingham.—For the construction of detritus chambers, elevator and recorder buildings, sedimentation tanks, &c., at the existing outfalls of the Cole Valley and Sutton Coldfield main sewer, for the Birmingham Tame and Rea District Drainage Board. Mr. John D. Watson, engineer, Tyburn, near Birmingham:—

Curral, Lewis & Martin, Birmingham	£11,561 0 0
J. S. Dawson, Buxton	11,546 0 11
T. Lowe & Sons, Burton-on-Trent	11,522 0 0
J. Hodson & Son, Nottingham	10,434 12 3
Bentley & Loch, Leicester	10,605 10 0
R. H. B. Neal, Ltd., Plymouth	10,350 0 0
W. Cunliffe, Kingston-on-Thames	9,425 0 0

* Accepted.

Bradwell-on-Sea (Essex).—For the erection of six workmen's cottages, for the Maldon R.D.C. Mr. H. G. Keywood, surveyor, Maldon, Essex:—

Wakelin, Brentwood	£2,250
Carnell & Dowsett, Steeple	1,690
C. Reed, Burnham-on-Crouch	1,653
Myall & Upton, Clacton-on-Sea	1,592
H. Potter & Sons, Chelmsford	1,500
W. Gladwell, jr., Walton-on-Naze	1,474
J. Rayner, East Hanningfield	1,310

* Accepted.

Chichester.—For alterations to 81 and 82, East Street Chichester, for Messrs. Halsted & Sons, ironmongers and engineers, Chichester. Messrs. Wade & Austen, architects, East Street, Chichester:—

C. Hooker & Sons, Chichester	£2,336 5 11
A. Crouch, Worthing	2,147 0 0
A. Burrell, Arundel and Littlehampton	2,119 0 0
F. Hill, Summersdale, Chichester	2,036 0 0

* Provisionally accepted.

Croydon.—For builder's work in extension to electricity works:—

G. A. Pillatt	£4,425 1 3
C. Cooper	4,225 0 0
W. Roberts	4,222 1 7
F. W. Green	4,153 3 8
Davis & Leaney	4,023 0 0
J. Ferguson & Co.	3,990 0 0
Thomas & Edge	3,982 0 0
Smith & Son, Ltd.	3,929 0 0
W. Potter	3,823 79 6
Bulled & Co.	3,775 0 0
C. Jackson	3,635 0 0
E. J. Saunders	3,600 0 0
S. Page & Son	3,585 0 0

* Accepted.

Coalville (Leics.).—For new sewers at Whitwick, for the Coalville U.D.C. Also concrete tanks, with concrete carriers, distribution chambers, &c. Mr. J. B. Everard, M.I.C.E., engineer, 6, Millstone Lane, Leicester:—

J. Jameson, Birmingham	£22,986 12 4
J. & T. Binns, Croydon	21,401 0 0
F. W. Trimm, Dorking	21,231 0 0
J. S. Dawson, Blackpool	20,986 5 2
G. M. Kerry & Co., Nottingham	20,073 0 8
S. Johnson & Son, Manchester	19,935 13 9
J. Holme, Leicester	18,846 0 0
A. Braithwaite & Co., Leeds	18,147 6 7
Johnson & Langley, Leicester	17,717 0 0
Bentley & Loch, Leicester	17,692 0 0
G. F. Tomlinson, Derby	17,503 10 0
J. Fletcher, Heywood	17,323 6 6
E. Orton, Coalville	17,163 0 4
W. Brig, Bradford	17,105 0 0
J. Hodson & Son, Nottingham	16,901 11 3

W. Moss & Sons, Loughborough	£16,772 10 0
R. Wood, Bingley, Yorks	16,054 0 0

* Accepted.

Grimsby. For the erection of a house for Mr. C. Bellamey. Mr. Herbert C. Scaping, architect, Court Chambers, Grimsby. Quantities by Mr. J. Watson, Hull:—

Cartledge & Waterman	£1,813 2 6
Wilkinson & Houghton	1,801 0 0
Hewins & Goodhand	1,800 0 0
H. Marrows	1,796 0 0
Gilbert & Kilton	1,791 2 6
J. Markwell Holmes	1,789 5 0
G. & I. Smith	1,785 10 0
W. Ion	1,776 2 1
J. H. Thomson & Sons	1,750 0 0

* Accepted.

Hanley (Staffs.).—For the erection of three shops, Piccadilly, Hanley. Mr. Elijah Jones, M.S.A., architect, &c., 10, Albion Street, Hanley:—

J. Cope, Wellesley Street, Shelton	£2,002 17
Stoke-on-Trent	2,000 0
E. Roberts, Hinde Street	1,980 0
T. Chatfield & Sons, New Hall Street	1,980 0
J. Cooke, Porthill, near Longport	1,930 0
A. Ward, Shelton	1,865 0
Colley & Lindop, Park Street	1,840 0
G. Ellis, High Street	1,760 0
T. Godwin, Raymond Street	1,700 0
C. Cornes & Sons, Lichfield Street	1,600 0

* Accepted. [Rest of Hanley.]

Kensington, W.—Accepted for the erection of Campden Hill Court (Blocks D and E). Messrs. Palgrave & Co. and Messrs. Rolfe & Matthews, joint architects:—

Mr. C. Gray, Hampstead and Shepherd's Bush	£56,100
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[Work has been commenced]

[Mr. Gray recently completed King's Gardens, Hampstead, at a cost of about £50,000, Messrs. Palgrave & Co. being the architects.]

Leyton (Essex).—For constructing the Fillebrook Valley sewer in Sidmouth Road, and between Southwest Road and Wallwood Road, and a new by-pass culvert at the sewage works, for the Leyton D.C. Mr. William Dawson, M.I.C.E., surveyor:—

R. Ballard, Kilburn, N.W.	£4,975 0 0
G. Bell, Tottenham	4,968 10 6
Rowell & Sons, Clapham	4,835 19 6
T. Adams, Wood Green	4,670 15 6
F. J. Coxhead, Leytonstone	3,678 0 0
J. Jackson, Plaistow	3,729 13 6
G. J. Anderson, Poplar	3,404 14 1
W. Manders, Leyton	3,331 12 8

[Surveyor's estimate, £3,560]

Rowell & Sons	£4,646 17 0
G. Bell	4,637 10 6
R. Ballard	4,297 0 0
T. Adams	3,927 19 6
J. Jackson	3,419 14 2
G. J. Anderson	3,029 5 11
F. J. Coxhead	3,003 0 0
W. Manders	2,957 3 8

[Surveyor's estimate, £3,080]

London, E.—For the execution of certain works in connection with the making of alterations and additions at their school building on the workhouse premises in Bancroft Road, Mile End Road, E., for the Guardians of Mile End Old Town. Mr. J. M. Knight, architect, 35, Bancroft Road, Mile End Road, London, E.:—

Mills, De Beauvoir Road, N.	£11,958
Robson & Moon, Croydon	11,500
Turnbull & Co., Fenchurch Street	11,100
W. Gladding, Whitechapel Road, E.	10,997
Watts, Johnson & Co., Limehouse	10,777
Lawrence & Co., City Road	10,712
Perry & Co., Bow	10,686
Nightingale, Thames Embankment	10,685
Spencer, Santo & Co., Westminster	10,500
F. & F. J. Wood, Mile End	10,431
Neal & Co., Mile End	10,218
Foster & Co., Norwood	9,968
T. Pearce, Thornton Heath	9,680
F. Wilmott, Ilford	9,617
G. Barker, Philpot Street, Mile End	9,447
Harris & Wardrop, Limehouse	9,391
Yates & Co., Bow	9,323
Kent Lewisham	9,259
E. Jackson, Stepney	9,213

Thompson & Co., Hampstead Road, N.W.	£8,737
R. & E. Evans, Peckham	8,662

* Accepted.

London.—For general engineering works at the South-eastern Hospital for the Metropolitan Asylums Board:—

Werner, Pfeiderer & Sons, Ltd., Gray's Inn Road, W.C.	£24,000 0 0
T. S. Knight & Sons, Great Portland Street, W.	22,500 0 0
J. Simpson & Co., Ltd., Grosvenor Road, S.W.	20,050 0 0
Dargue, Griffiths & Co., Ltd., Liverpool	19,983 0 0
Moorwood, Sons & Co., Gray's Inn Road, W.C.	17,500 0 0
J. Metcalfe, Preston	17,460 5 0
R. Harding & Son, Brixton Hill, S.W.	17,370 0 0
Z. D. Berry & Sons, Regency Street, S.W.	16,956 0 0
G. Fawley & Son, Ltd., Halifax	16,361 6 6
P. H. Allin & Sons, Cambridge	16,134 0 0
Rosser & Russell, Ltd., Charing Cross, S.W.	15,930 0 0
J. & F. May, Lincoln's Inn Fields, W.C.	15,700 0 0
Wenham & Waters, Ltd., Croydon	15,180 0 0
Lea & Warren, Kettering	14,905 0 0
W. Freer, Leicester	13,750 0 0
Brightside Foundry & Engineering Co., Ltd., Victoria Street, S.W.	12,756 0 0
J. Richmond & Co., Ltd., 30, Kirby Street, Hatton Garden, E.C.	12,340 0 0

[Engineer's estimate, £16,000.]

Pontypridd.—For taking down and rebuilding three shops in Taff Street, Pontypridd, for the Rhondda Valleys Brewery Co., Ltd. Mr. Arthur O. Evans, architect, Pontypridd:—

E. B. Smith Jones	£3,142 2 1
Morris & Thomas	2,960 0 0
M. Julian	2,794 0 0
A. Seaton	2,549 19 0
E. Turner & Sons, Cardiff	2,480 0 0
W. Williams, Cardiff	2,450 0 0
Williams & James	2,396 17 6
Knox & Wells, Cardiff	2,222 0 0
E. R. Evans & Brothers, Cardiff	2,125 0 0

[Rest of Pontypridd.]

Purley (Surrey).—For the erection of residence in Central Rd., for Mr. J. W. Forrester, Mr. J. Halsted Waterworth, architect and surveyor, 281a, Queen's Road, New Cross Gate, S.E., and Welling, Kent:—

Hanscomb & Smith	£2,761
S. R. Best, Brockley	2,175
David Waller	1,949
W. H. Baldwin	1,945
T. Vaughan & Sons, Caterham Valley	1,718

* Accepted. [Rest of Croydon.]

Stockport.—For the manual and team labour and materials required in excavating, sewerage, forming, paving, kerbing and flagging the following streets within the borough—Brook Street (late Buckley Street), Samuel Grove, Clarke Street, Cross Street, Frances Street, Ann Street, Weston Street, Hawkins Street, Coronation Street, Brook Street and Passage No. 1, Reddish Road, all in South Reddish—for the Highways and Sewers Committee. Mr. John Atkinson, A.M.I.C.E., borough surveyor:—

W. Snape, Eccles	£5,442 9 6
W. H. Worthington, Rusholme Road, Manchester	5,256 4 4
W. H. Eva, Stockport Road, Cheadle Heath	5,053 2 3
Gosling & Stafford, Hazel Grove	5,074 14 5
P. D. Hayes, Old Road, Stockport	4,742 9 8

* Accepted.

Southend-on-Sea.—For extension of the carshed at the electricity works, comprising the erection of workshop, &c., construction of storage tank and reservoir, and other works for the Corporation. Mr. E. J. Elford, M.I.M.E., borough engineer:—

Baker & Wiseman	£3,220 19 0
F. & E. Davey	3,175 11 10
E. West, Chelmsford	2,938 0 0
J. Carter & Co.	2,944 11 10
K. Elvey	2,880 12 0
S. E. Moss & Co.	2,798 8 10
F. E. Wadhams	2,790 0 0
J. E. Fluxman	2,647 10 2

[Borough engineer's estimate, £2,950.]

* Accepted. [Rest of Southend.]

(Continued on p. xx.)



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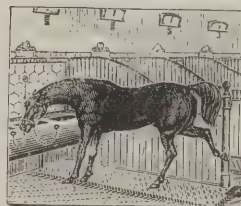
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ADVERTISER: 45, F.R.I.B.A., late Executive Engineer, Public Works. Home and Colonial experience. Accept nominal salary to resume home work.—A., 21, Nemours Road, Acton.

A **N ARCHITECT** has time to ASSIST others with Working Drawings, Details, and Perspectives at own office. Special terms for Competitions. Good general experience.—Apply, H. L. FEDDEN, 11, Hart Street, Bloomsbury.

A **ARCHITECT'S AND SURVEYOR'S** **ASSISTANT** desires Re-engagement; six years' London and country practical experience; designs, working drawings, specifications, &c., and surveying; excellent testimonials.—C. D., 30, Beaumont Street, W.

A **ARCHITECT and SURVEYOR'S** **ASSISTANT** (22) requires situation, 6 years. Capable all duties, working drawings, details specification, quantities, levelling, and field surveying, &c. Salary 25s.—Box 167, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

A **ARCHITECT'S and SURVEYOR'S** **JUNIOR ASSISTANT** desires Engagement, 4½ years' experience. Working drawings, details, surveying, &c.—G., 33, Bickerton Road, Highgate, N.

A **ARCHITECT'S ASSISTANT** desires appointment in London or district. Five years' experience. Working and detail drawings, surveying, &c. Salary a secondary consideration.—Apply N. T., 38, Dover Street, Hull.

A **ARCHITECT'S ASSISTANT**, thoroughly experienced in Construction and Design, including steelwork; can take off quantities, measure up, &c. Specifications.—Box 135, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

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A **ARCHITECT'S ASSISTANT** (23) desires Engagement, London or South of England. Five years' experience. Neat draughtsman, designs from sketches, details, perspective, &c. Salary 30s.—ALCWN A. JONES, Sunnyside, Dudley. 175

A **ARCHITECT** desires to assist other Architects at his own office. Working drawings from sketches; perspectives; details, &c. Terms moderate.—Apply ARCHITECT, The Pathway, Bowalley Lane, Hull.

A **ARCHITECT'S GENERAL ASSISTANT** desires RE-ENGAGEMENT. Good draughtsman, working and detail drawings, dilapidations, and perspectives. Four years' experience. Excellent reference from present employers. Specimen drawings submitted. Salary required 30s.—Address A., care of Messrs. Malloes and Grocock, Times Buildings, Bedford.

A **ARCHITECT'S JUNIOR ASSISTANT** desires engagement, seaside, South Coast; four years' experience working drawings, neat draughtsman, levelling, specification, office routine, &c.; moderate salary.—B. J., 17, Marine Parade, Lowestoft. 172

B **UILDER'S GENERAL FOREMAN** wants job; good reference from last employer.—Address S. N., 180, Cavendish Road, Balham, S.W.

B **UILDERS' SON** seeks Sit. (age 24), as BUILDER'S ASSISTANT, Time-taking, and general routine. Fill up time at bench.—Box 152, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

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D **RAUGHTSMAN** desires **EMPLOYMENT**.—G. FLETCHER, Thurlough, near Bedford.

D **RAUGHTSMAN** desires Evening Work in preparing Architects' drawings and tracings. Terms by arrangement.—R. W. HOSKINS, 20, Camden Street, Oakley Square, N.W.

D **RAUGHTSMAN** desires Evening Work. Working or competition drawings, perspectives, tracings and surveys. Terms by arrangement.—COMPASS, 75, Navigation Street, Birmingham.

E **VENING WORK** desired by neat draughtsman in assisting Architects at office or at home. Terms by arrangement.—Apply W. C. A., 12, Clonmell Road, Fulham, S.W.

E **VENING WORK** required by a neat Draughtsman in assisting Architects, Surveyors, or Builders in preparing working drawings, details, tracings, specifications, or quantities.—HENRY PHILLIPS, Cotingham, Hull.

G **ENERAL FOREMAN** Disengaged wants job. Carpenter. Aged 46. Good references. Town or country.—H. W., 57, Chiswick Road, Lower Edmonton, N.

G **ENERAL FOREMAN** seeks RE-ENGAGEMENT, town or country. Thoroughly practical in all branches. Age 45. Carpenter and joiner. Good references. Energetic and reliable.—A. B., 61, Albert Road, Peckham, S.E.

G **ENERAL or WORKING FOREMAN** seeks ENGAGEMENT. London and Provincial experience. Abstainer. Trade, carpenter. Age 46. Wages moderate.—H., 28, Glengall Road, Old Kent Road. 188

G **OOD MASON** wants Job; piecework or day; fixing or banker; good references.—H. E., 8, Alpha Road, New Cross, S.E.

H **ANDY-MAN** wants re-employment in Factory, Warehouse, or Estate, well up in all kinds of general house repairs; good references; own tools.—W. H., 36, Priory Road, South Tottenham. 185

H **OUSE DECORATING and REPAIRS.** Surveyors' Dilapidation Work estimated for; very moderate charges.—12, Choumert Grove, Peckham.

J **UNIOR CLERK** wants SITUATION in builder's office. Age 19. Understands general office routine.—Apply, Lockwood, "Llanberis," Westgate-on-Sea. 181

J **UNIOR DRAUGHTSMAN** (20) at liberty. Design, Library and School Board Competitions, Construction. Lancashire experience.—MILLS, &c., Architect, 6, Granville Road, Fallowfield, Manchester.

M **ACHINIST** wants job, to work circular saw, overhead, and thickening machines. Joinery, cabinet, or general work. Good refs.—J. B., 1, Berkeley Terrace, Norwood Road, Southall, Middlesex.

Q **UANTITY SURVEYOR'S JUNIOR** **ASSISTANT** wants immediate Engagement. Abstracting, billing, and assist in taking off. Good references.—THOMAS, Castle Street, Usk.

T **O BUILDERS and SPECULATORS.** Wanted Joinery, Carcassing Stairs (Piecework). Any quantity. Lowest prices. Any distance.—REID, 91, Mill Hill Road, Acton, W. 189

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THE ARCHITECTURAL ASSOCIATION.

February 5th, Ordinary General Meeting, at No. 9, Conduit Street, W., at 7.30 p.m. Paper by Mr. W. A. HARVEY on "Cottage Homes." Illustrated with lantern views.

February 6th, Second Spring Visit, to No. 11, Hill Street, Berkeley Square, and No. 9, Hyde Park Terrace, W., by kind permission of Mr. J. L. Williams. Members to meet at No. 11, Hill Street, at 2.30 p.m., and to produce their Membership Pass for the current Session.

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THE BUILDERS' JOURNAL

AND ARCHITECTURAL RECORD.

February 10, 1904. Vol. 19, No. 470.

6, Great New Street, Fetter Lane, E.C.

Summary.

Mr. David B. Butler, the new president of the Society of Engineers, speaks well of the rotary kiln in the manufacture of Portland cement. It is now almost exclusively used in America, though when brought out in this country about twenty years ago it was abandoned as impracticable. The setting of cement being a matter of solution, super-saturation and subsequent crystallization, it is consequently retarded by cold and accelerated by heat. Experiments show that taking 60 degs. Fahr. as normal, the setting is accelerated by 14 per cent. at 80 degs. and retarded by 114 per cent. at 40 degs. (Page 64.)

Twelve of the allied societies have declared in favour of architects' registration; five are neutral. (Page 67.)

Nothing definite has yet been settled about the restoration of the Temple Church. (Page 64.)

The second annual report of the Competition Reform Society records satisfactory progress. The committee object to the conditions in the competition for an isolation hospital at Settle. (Page 68.)

Some City churchyards are very little known. One is contained within the walls of the Bank, where a little fountain plays amidst shrubs and blooms which come as a surprise to those who have never seen the nurseryman's cart at the gate. Bishopsgate churchyard used to contain an aviary of rare birds. At St. Dunstan's-in-the-East there was a rookery, and a house opposite was charged with a yearly payment of £3 for the purpose of furnishing the rooks with osier twigs: while of Cripplegate churchyard eighty years ago we read that "all cattle and poultry found therein will be taken to the Green Yard." (Page 62.)

Cadbury's village of Bournville, outside Birmingham, has now more than 500 houses. There is an average garden space of 600 sq. yds. to each. The cost varies from £175 to £750 per house. (Page 71.)

The Late Perpendicular tower of All Saints' Church, Derby, which, sixty years ago, was "ruthlessly scraped, chipped and recased from base to pinnacles," is to be restored by competent hands. (Page 64.)

In a paper which he read before the Architectural Association (Discussion Section) Mr. T. H. Russell, M.A., said that "natural" ventilation was too uncertain, irregular and feeble for chemical laboratories; enclosed centrifugal fans afforded the best results. (Page 68.)

The Markets Committee of the Manchester Corporation have resolved that no alterations in or additions to their quantities or specifications must be made by the City surveyor or the City architect without the consent in writing of the chairman of the Committee. (Page 70.)

Double-Decked Roads.

THE scheme for double-decked roads which Mr. Meik laid before the London Traffic Commission last week seems to us to be as unsuitable as it would be hideous. Just think of the aspect of a street with one road surface raised about 20ft. above the other—slow and heavy traffic on the lower level and motor-cars and other fast vehicles tearing along above! Mr. Meik spoke of two great arteries across the metropolis, not less than 160ft. wide, the north to south avenue starting near Enfield, crossing the Thames between Blackfriars and Waterloo Bridges, and terminating near Croydon; and the west to east avenue extending from Hounslow to Barking. Sir John Wolfe Barry and others have suggested similar new thoroughfares, but even their paltry six-million schemes have been relegated to the imagination of the past. Yet here comes Mr. Meik with a scheme costing more than seventy-one millions, though he speaks magnanimously of a recoupment of twenty-one and a nett yearly revenue of 1½ millions. Of the serviceability of such a scheme we say nothing; but when we conjure up a picture where the overhead railways of New York and Berlin are muddled up together, we fancy that would approximate the hideousness of Mr. Meik's proposal for double-decked roads. Apart from this, it seems absurd for a Commission that is seriously considering a great problem, in the hope of finding some satisfactory and practical solution, to spend its time on such a visionary idea.

The Sheffield Works Department.

WE thought it had all been settled that the Sheffield Works Department should be re-started under the direction of a committee, but apparently we were a little forward in our assumption, for the "Sheffield Daily Telegraph" facetiously remarks that the tussle should draw big houses in course of time. It has been in progress since November 9th, and is to be resumed to-day. No special arrangements appear to have been made for the accommodation of spectators, but as the excitement of the contest grows no doubt the Council will be able to turn it to good account. Our contemporary suggests that the door-money might be devoted to the Lord Mayor's Relief Fund. At the special meeting last month the Liberals scored a victory, after two Conservative successes. The Conservatives have now issued another challenge. On the agenda paper is a motion for rescinding the decision of the last meeting. "Both sides will again put their fullest teams in the chamber, and the result will at least be awaited with a sort of languid amusement. Victory will depend, as on the

last occasion, on which side has the smaller number of members in the doctors' hands." The world has much to do yet, and possibly among the last failings to be swept away at the dawn of the millennium will be that which mixes up politics and party opinions with matters that should not have the slightest association with them.

The Tube Lifts Contract.

THE announcement that the Otis Elevator Co., Ltd., of London, has secured the £350,000 contract for the electric lifts of the whole of the Yerkes system of tube railways will, we are sure, have been read with the greatest satisfaction by people in this country. We congratulate the company on having secured this, the largest contract for passenger lifts ever placed, at home or abroad. The lifts will be electrically operated from the Chelsea generating station, which will furnish power for the three railways comprising the system—namely, the Baker Street and Waterloo, the Charing Cross, Euston and Hampstead, and the Great Northern, Piccadilly and Brompton.

The Usher Hall.

READERS will remember that there has been considerable discussion at Edinburgh in regard to the Usher Hall. The placing of the work in the City Architect's hands does not seem to have been popular among those interested, as we may judge from the remark of Mr. Hunter Crawford (president of Edinburgh Architectural Association) that this was "a thing they ought to put a stop to if possible." But the matter has now been settled, and criticism is mere waste of time, for at last week's meeting of the Lord Provost's Committee general approval was given to the plan, prepared in the City Architect's department, for the construction of the building on a site between the School Board and City Parish Council offices in Castle Terrace, at a total probable outlay of £145,000, this sum to include the cost of altering the roadway, building a retaining wall, providing an organ, some additional furnishings, and, of course, the site itself. The present value of the late Mr. Usher's benefaction is £120,000, so that another £25,000 will be necessary to complete the undertaking, but it is only right to point out that against that there is to be put the very considerable revenue which is likely to accrue from the use of the hall. A feature of the plan is the appropriation of the portion of Castle Terrace Gardens extending from Cambridge Street to Corn-wall Street for the purpose of forming a terrace in front of the hall to King's Stables Road, and the filling up of the sloping bank on its inner or south side to the level of Castle Terrace.

NOTES ON THE CITY CHURCHES.—III.

(Continued from p. 16, No. 466.)

By F. HERBERT MANSFORD.
(Photographs by J. Mansell.)

Churchyards.

THE churchyards have often been curtailed and sometimes altogether absorbed by streets and buildings. One of the prettiest is that contained within the walls of the Bank of England, where a little fountain plays amidst shrubs and blooms which come as a surprise to those who have never seen the nurseryman's cart at the gate. And how the old tree seems to flourish, rearing its topmost branches above the atmosphere of gold and sending its roots far down among dead men's bones.

The now united burial-grounds of three parishes form a delightful oasis in Aldersgate, where is another fountain and a loggia constructed at the expense of Mr. G. F. Watts, R.A., from the design of Mr. Ernest George. On the wall, tablets are placed from time to time commemorative of heroic deeds performed in everyday life, especially among the poor.

Bishopsgate churchyard used to contain an aviary of rare birds who gazed enviously at the peacocks strutting freely and proudly upon the gravel paths. The aviary has now been abolished, and the public share the garden with pigeons and sparrows.

At the beginning of the last century there was a rookery at St. Dunstan's-in-the-East, and "a house opposite to the church was charged with a yearly payment of £3, for the purpose of furnishing the rooks with osier twigs, to enable them to build their nests without trouble, and for other sustenance."

Cripplegate churchyard still has a somewhat rural aspect, but we read that in 1822 "all cattle and poultry found therein will be taken to the Green Yard"! These would probably have been the property of owners whose houses backed on to the burial-ground. At the south-west corner is a bastion of the old city wall, and at least four other burial-grounds are bounded by existing portions of the wall. This churchyard has been much utilized; in 1659 the vestry "Resolved, to discontinue the military traying in the churchyard" and a few years later "that no more clothes be dried in the churchyard."

The churchyards of Christchurch and of St. Bartholomew-the-Great are in reality the

consecrated sites of the naves of the Grey Friars and Augustinian churches. The nave of the former church survived until the Great Fire; that of the latter was destroyed at the dissolution of the monasteries; in both cases the burial-grounds of the monks were appropriated to other purposes, that of the Grey Friars becoming one of the playgrounds of the Blue Coat School, while that at Smithfield was gradually built upon or used as stable yards.

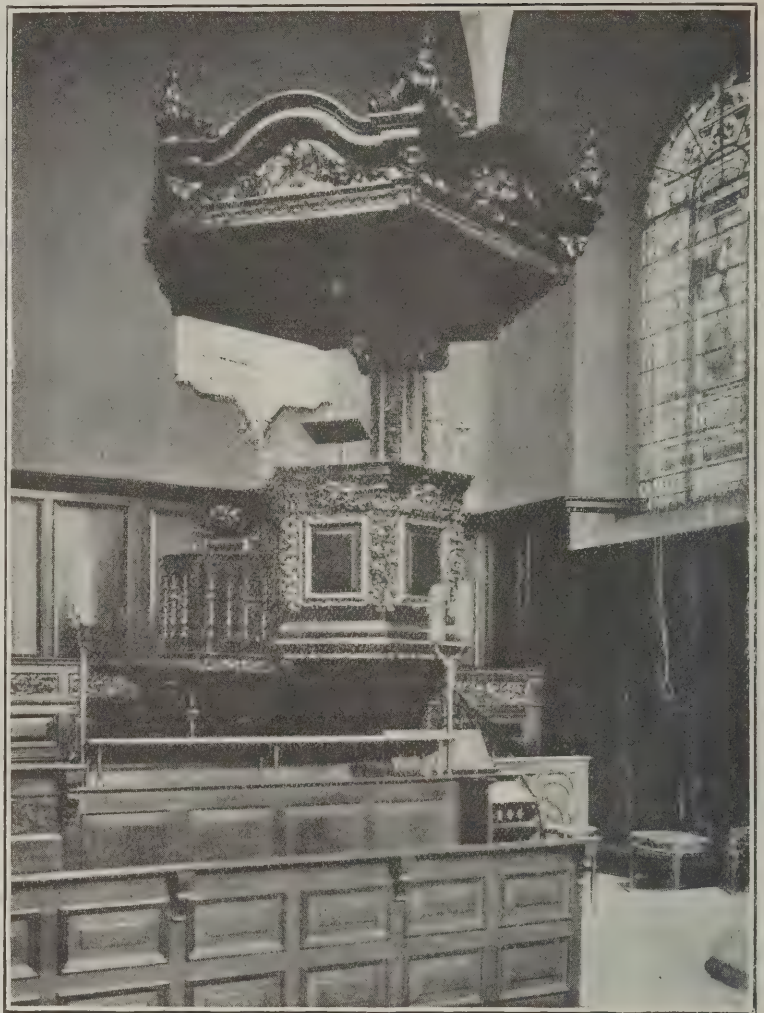
Some churchyards are very little noticed, being much hemmed in, as that of St. Martin Orgar, near Cannon Street, which is of considerable size. Here in the renovated ruins of the mediæval church the Huguenots first worshipped after the fire. Some churches have small yards attached to them only to be discovered by that patient waiting of one's opportunity which is one of the incidents of antiquarian research.* There is a burial-ground on the north of St. Stephen's, Coleman Street, approached through the old rectory house (now let as offices). There is also a door leading directly from this house into the church at the east end. St. Vedast, Foster Lane, has a small paved yard with a short colonnade on one side and a picturesque brick vestry-house on another, the latter with leaded panes in its upper windows and a tablet "Non Nobis 1686." St. Margaret, Lothbury, has a little-known yard on its north side, and also St. Edmund the King, Lombard Street. Not many people pass behind the Mansion House to see the churchyard of St. Stephen's, Walbrook.

The churchyard of St. Sepulchre was very much curtailed by the construction of Holborn Viaduct. Other burial-grounds have disappeared altogether, or been paved over and unenclosed—for example, those of St. Lawrence Jewry, St. Michael Bassishaw and St. Mary Abchurch: this latter is laid with granite setts in geometrical patterns with excellent effect.

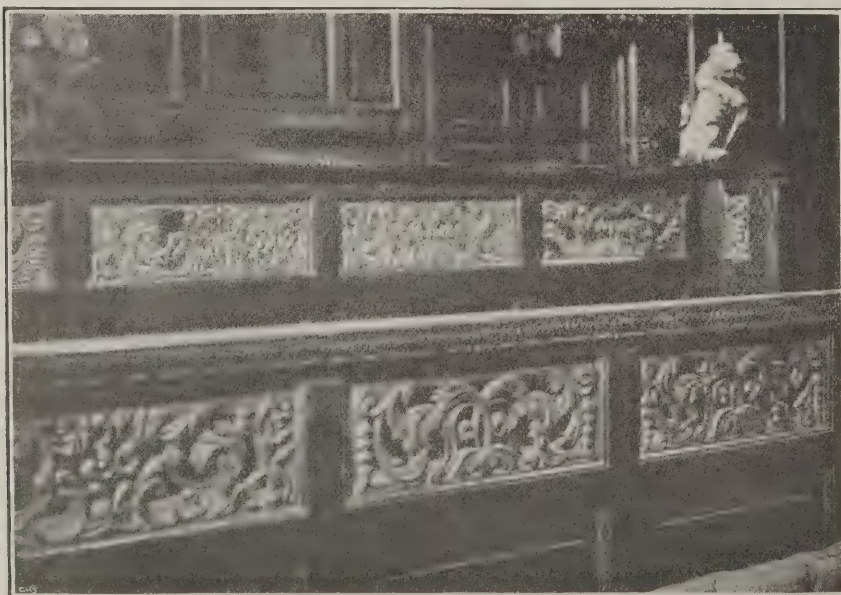
Interiors.

Turning now to some points concerning the interiors of the churches, one must be struck by the variety of types exhibited. Go

* From the windows of houses on the north side of St. Helen's Place, Bishopsgate, one obtains a view of what remains of St. Ethelburga's churchyard with its three lofty plane trees.



PULPIT, ST. MARY ABCHURCH.



CHURCHWARDENS' PEW, ST. MARY ABCHURCH.

where we will in the country or abroad we find churches of one type gathered together. But in London, which, through commerce, has been in touch with the provinces and foreign countries for so many generations, we get churches of many types, yet possessing one characteristic common to all. Paradoxical as it may seem, after admitting foreign influence, the churches are all English in character. The little Norman work remaining has been so modified by that of succeeding generations, and Wren used his Roman detail with so much individuality, that no church in the City could possibly have been erected in France or Italy.

One church stands quite alone as far as the City, or even the metropolis, is concerned. The solemn solidity of the choir of St. Bartholomew-the-Great, the precious prep of the Lady Chapel beyond and the added dignity of triforium and transept are now unhappily unique. Contrast with this the openness of St. Giles' or St. Sepulchre's, with their spacious aisles, large windows and general air of social prosperity and security; or St. Bride's, dignified and reposeful, with its cleverly contrived galleries the whole length and width of the church and reaching far up on either side of the organ, suggestive of a closely populated parish whose inhabitants attended regularly every Sunday, each family occupying its own pew, comfortably cushioned and hassocked. Since Wren's day St. Bride's has been judiciously tampered with; the arrangement of the eastern end dates only from 1823; naturally the elegant gas standards are modern, and the rich colouring of the church is almost an affair of yesterday.

Again how different, although by the same architect, is St. Mary Abchurch, a structure about 60ft. square without pier or pillar, save the one supporting an angle of the tower. The roof externally is decidedly lacking in grace: within it is a dome resting at four points upon the walls and supported between by pendentives. No photograph can give a just idea of the beauty of this church, for its colouring is its greatest charm. The body is filled with oak pews, and others, with elaborately carved tops, are carried round the sides on a low platform and constitute a dado to the rich red walls. The windows are of good stained glass, and above rises the dome painted by Sir James Thornhill. At the west end is an organ gallery with baptistery and vestry below; at the east an oak reredos enriched by Gibbons's usual emblems carved with remarkable delicacy. The grapes, the wheat and other fruit and flowers were formerly painted in their natural colours by Thornhill. The effect must have been novel and possibly charming. There is a wonderful harmony in this church, every detail being delightfully thought and wrought out, from the magnificent pulpit to the lion and unicorn rampant on the pews. Three geniuses have been at work here, and yet Elmes tells us in his memoirs of Wren that the church has "no great pretensions to notice." What a contrast between its comfortable magnificence and the somewhat ostentatious interior of St. Michael's, Cornhill, the reticence of All Hallows on the Wall, or the meanness of St. Katherine Coleman and St. Alphage!

Another rich interior is that of St. Lawrence Jewry. From its propinquity to the Guildhall this church has added to itself something of the dignity of a Corporation chapel, and the parishioners have been fully conscious of the fact. Twenty-seven windows have been filled with stained glass in recent years in honour of departed civic worthies and others. It is questionable whether so much rich glass does not defeat the object sought, when the depth of the colouring is lost through the use of artificial light rendered necessary by this same all-pervading richness. Probably the most suitable type of window for the

majority of City churches is one in which white glass predominates and rich colouring is concentrated in or about the centre. The most recent window at St. Lawrence Jewry, that to the memory of Sir Thomas More, advances in this direction and without any loss of beauty.

But the true glory of the church is its organ-case, which is carried upon Corinthian columns of carved oak and forms with them a portal to the central aisle. Some of the small organ pipes are brought forward in front of the player's seat and repeat in their grouping the larger pipes beyond. Such an arrangement gives enhanced scale to the

Wren's finest interior is usually considered to be that of St. Stephen's, Walbrook. Previous to 1888 the church was filled with pews which ranged in height with the pedestals of the columns, and some critics feel the unity of the whole design has suffered considerably by their removal. It is difficult to follow Sir Christopher's intentions in the matter of seating, as an engraving of 1746 shows the church with a clear floor and the columns resting upon square pedestals as at present. Previous to 1888 these pedestals were octagonal and surrounded by wainscot, apparently coeval with the church. Mr. Penrose was called in after the pews had



ST. MARY ABCHURCH, ABCHURCH LANE, E.C.

whole. The case itself is of dark oak elaborately carved.

The church generally is richly decorated and gilded with good effect, but displays one remarkable solecism, inasmuch as the pilasters of the east end are given a dado of gilt ornament which is not repeated on the columns and pilasters of exactly similar size and proportions further west. This affords an interesting comparative study to an architectural student, but also shows a curious lack of appreciation of Wren's proportions and his consistency in decoration. It is to be hoped that the dado will not be reproduced when re-painting is undertaken.

In viewing this spacious interior it should be borne in mind that the wall dividing the north aisle longitudinally is no part of Wren's work, but an insertion of later times.

been removed (they had been allowed to be infected with rot), and he caused the pedestals thus fully disclosed to be built out to the square.*

The illustration on the next page, from a drawing of Edward Gyfford, suggests that the seats did not range with the pedestals but were considerably below it; measured drawings, however, made previous to their removal prove that the difference was less than here indicated.

Another debatable point is perhaps that of lighting. Here the architect's intentions are clear enough, although they have been ignored by the subsequent erection of the Mansion House. Gyfford's drawing, dated

* This point is fully discussed and illustrated in a paper by Mr. Penrose published in the "Transactions" of the Royal Institute of British Architects, Vol. VI. New Series (1890).

1808, shows Benjamin West's "Martyrdom of St. Stephen" obliterating the east window and suggests that the dome may have been more effective when the range of the spectator's vision was more limited. The painting, a fine one, is probably better seen than when placed between two windows.

It is interesting to go from this interior to that of the neighbouring church of St. Mary Woolnoth, for in both the beauty is mainly the effect of an arrangement of twelve columns supporting a lantern, only in the latter case the triple grouping is more emphatic. Wren's masterly genius shows itself in several ways, as his church, although little larger* than his pupil's, appears so much more spacious, affords more varied beauties, would accommodate a considerably larger congregation and cost far less.

Gwilt tells us in Britton and Pugin's "Public Buildings of London" that the proportion of points of support to area at St. Stephen's are barely three-twentieths, while at St. Mary Woolnoth they measure more than one-fourth.

(The next article will appear on March 2nd.)

PORTLAND CEMENT.

IN his presidential address to the Society of Engineers last week Mr. David B. Butler dealt chiefly with Portland cement and the various phases in which it affected the engineering profession. He observed that the manufacture of cement was not the mere navvying or lumping together of so many tons of chalk and clay, as many people seemed to suppose, but a delicate chemical operation involving great nicety in the proportioning of the calcareous and argillaceous ingredients and their conversion from carbonate of lime and silicate of alumina into definite silicates and aluminates of lime. The new rotary kiln or system of calcination was briefly described. Though but recently perfected in America, where about 90 per cent. of the cement output was now produced by that process, the rotary kiln was first brought out in this country by Ransome about twenty years ago, but abandoned as impracticable. It involved great nicety in adjustment and control, but the calcination process was in full view of the operator and could be regulated to any desired degree of intensity by varying the fuel supply, blast, speed of rotation, feed of raw material, &c. In addition to delicacy of control, it effected considerable economy in labour and enabled the whole process of manufacture to be performed by mechanical means.

Apart from the introduction of this kiln, of which as yet there were but very few installations in this country, the quality of the cement manufactured in the ordinary way had greatly improved during the past few years. An instance was quoted in which a newly established factory experienced considerable difficulty at first in disposing of their product because of its unusual strength, from which the user suspected overliming and consequent danger of subsequent deterioration. It was pointed out that however well founded such suspicions might have been in the earlier days of the industry, it by no means followed at the present time that a high tensile strain at the earlier dates indicated danger. An example was given of the average output of a factory developing 900lbs. per sq. in. at seven days neat cement, and 350lbs. 3:1 sand, which was perfectly sound according to all known tests and contained but 62 per cent. of lime.

* Exterior dimensions of St. Stephen's, omitting tower and vestibule, 88ft. by 66ft. approximately; of St. Mary Woolnoth, omitting tower and vestibule, 66ft. by 66ft. approximately.

The apsidal recess for the organ at St. Stephen's is omitted because it is completely filled and in no way adds to the effective spaciousness of the interior.

With regard to the testing of cement, the great need was uniformity in the methods of carrying out tests. Mr. Butler expressed the hope that the Standards Committee of the Engineering Institutions would be able to arrive at a workable uniform method of testing cement. Stress was also laid upon the desirability of a quicker method of arriving at the quality of cement, without having to wait the usual seven, fourteen or twenty-eight days necessary to allow the test pieces to set and harden. Although of value for estimation of constancy of volume, a doubt was expressed as to whether the various warm-water baths accurately developed the strength of the test pieces in strict ratio to their strength in cold water.

The uses and applications of cement were increasing day by day; the most important innovation of recent years had been the intro-

ments were quoted showing that, taking 60 degs. Fahr. as normal, the setting was accelerated by 14 per cent. at 80 degs. and retarded by 114 per cent. at 40 degs. It was urged that if cement were used with a fair admixture of common-sense, many of the causes of complaint would cease to exist.

Bricks and Mortar.

Aphorism for the Week.

A Gothic cathedral strikes one like the enthusiasm of poetry; St. Paul's, like the good sense of prose.—HORACE WALPOLE.

Effacing a Restoration.

THE effacing of a restoration is about to be undertaken on the beautiful Late Perpendicular tower of All Saints' Church, Derby.

Sixty years ago it was "ruthlessly scraped, chipped and recased from base to pinnacles, its admirable carvings recut, debased and vulgarized under the direction of a local so-called architect, backed by local Philistines who gloried in their shame"—to quote Mr. J. C. Robinson, writing to the "Times." All Saints' Tower was not in that extreme stage of dilapidation to which other similar structures, which have in recent years been properly and well renovated, had arrived. "There would have been nothing to object to other than entrusting the new work to utterly incompetent hands if this noble tower had reached the extreme limit of decadence to which, for instance, the great Norwich church of St. Peter Mancroft, and the two Coventry spires had attained. In these cases there was no alternative but to acquiesce in the proximate extinction of all form and record of details from natural decay, or the complete renovation of the work whilst the original forms



ST. STEPHEN'S, WALBROOK, E.C. (1808).

duction of ferro-concrete, in which, by embedding suitably arranged steel rods and wires into the concrete, its resistance to tensile stresses was increased about tenfold and thus rendered equal to its resistance to crushing stresses. One of the most important uses of this material was in the production of concrete piles, the great advantage of which was their increasing strength with age and practical imperishability.

It was shown that many of the causes of complaint against Portland cement arose from a lack of knowledge of its properties, such, for instance, as the dissatisfaction frequently caused by concrete failing to set and harden sufficiently quickly during very cold weather. The setting of cement being a matter of solution, supersaturation and subsequent crystallization, it was consequently retarded by cold and accelerated by heat. Experi-

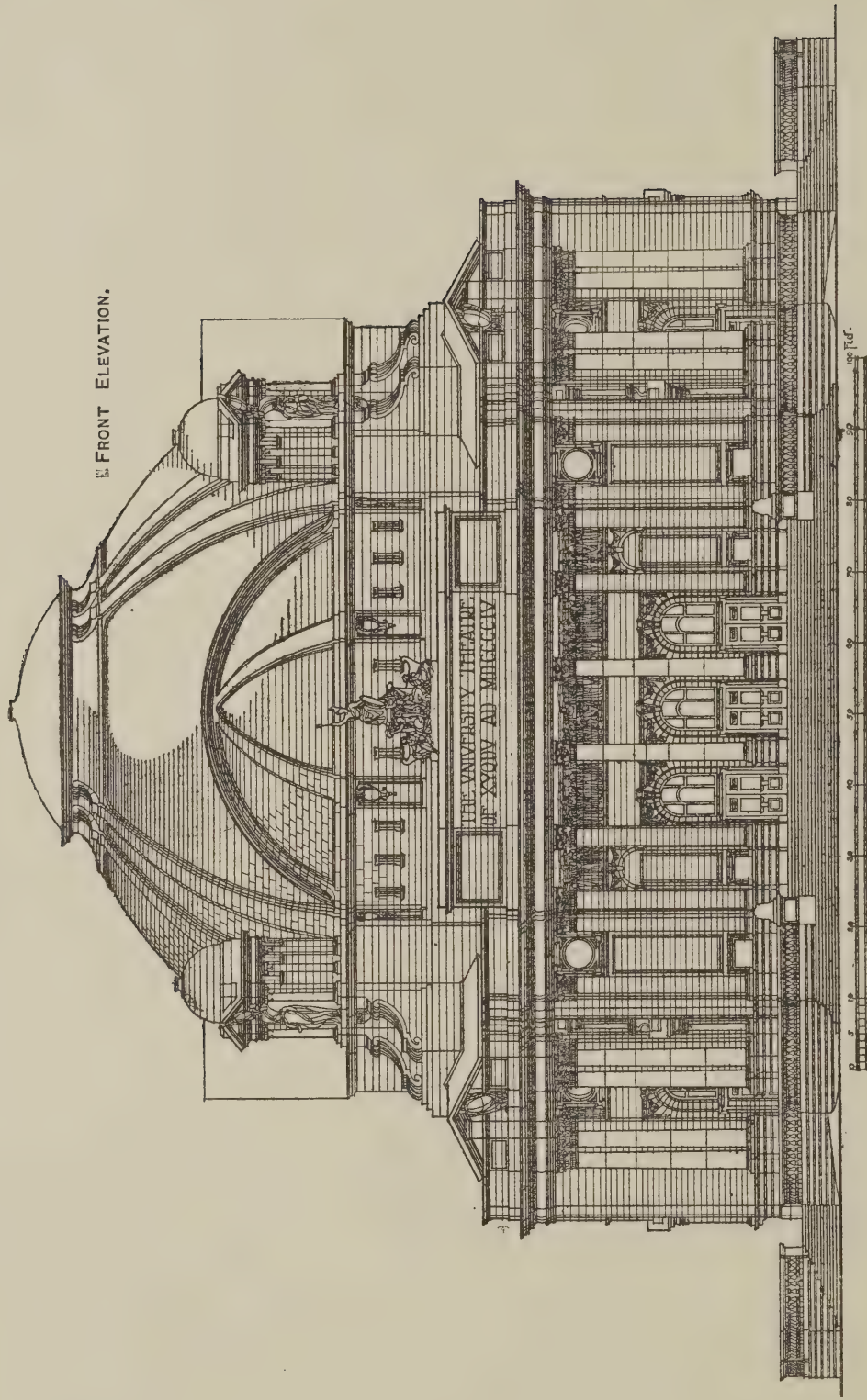
and facts of design were still to be discerned and carefully copied—which, in fact, in those instances has been excellently well done. This is still possible with All Saints'. The venerable halo of antiquity was, it is true, rent away and banished for ever with the loss of the ancient patina which once invested this beautiful work, but the exact facts and features of the design can and doubtless now will be ably and conscientiously restored to it by competent hands."

The Temple Church.—Nothing definite has yet been settled respecting the proposed restoration and renovation of the turret tower, stonework, &c., of the Temple Church, but it is understood that committees of the Inner and Middle Temples have recently been appointed to confer together on the matter.

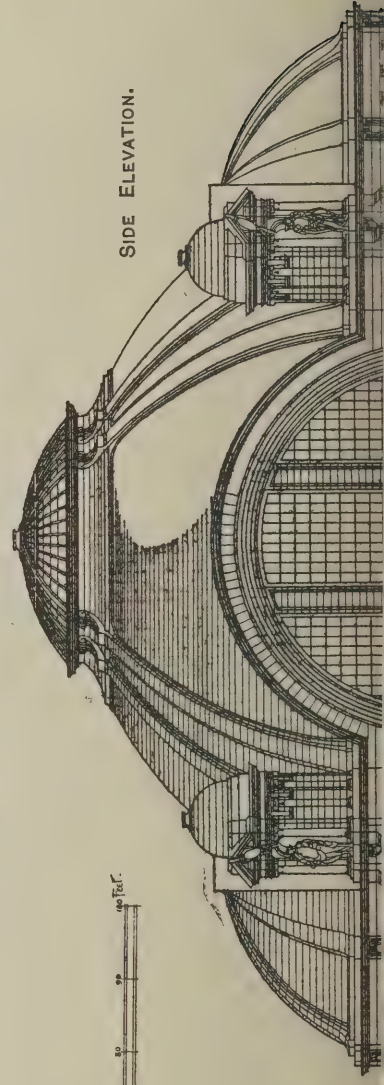
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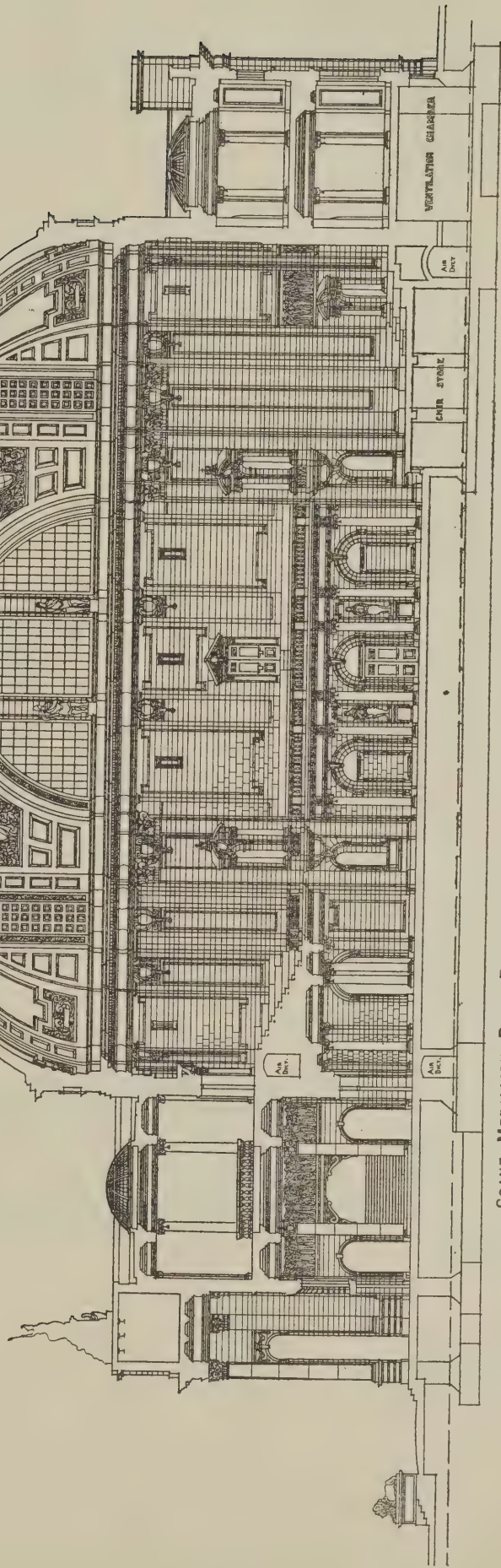
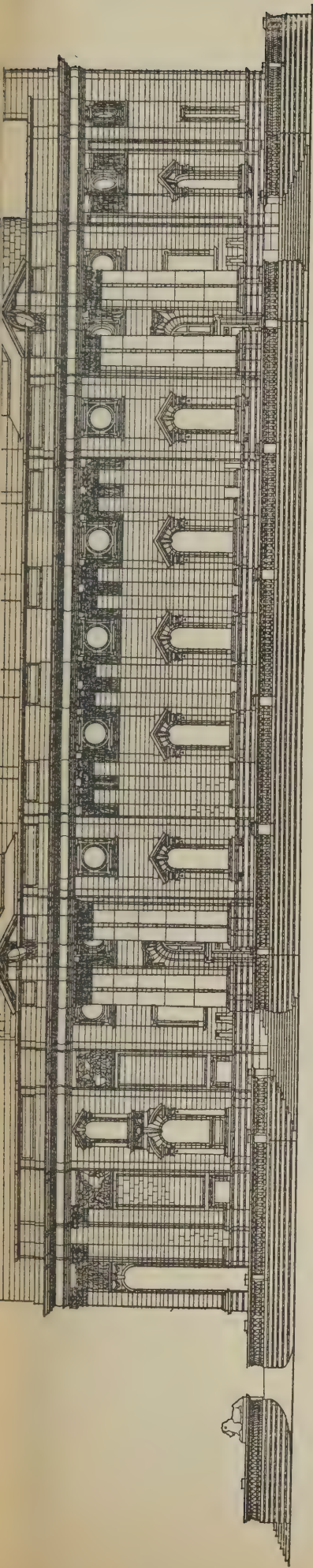
Supplement to
 THE BUILDERS' JOURNAL AND
 ARCHITECTURAL RECORD,
Wednesday, February 10th, 1904.

FRONT ELEVATION.



SIDE ELEVATION.





SOANE MEDALLION PRIZE DESIGN FOR A UNIVERSITY THEATRE BY FREDERIC J. HORTH.

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Correspondence.

Schools in the North of London.
To the Editor of THE BUILDERS' JOURNAL.

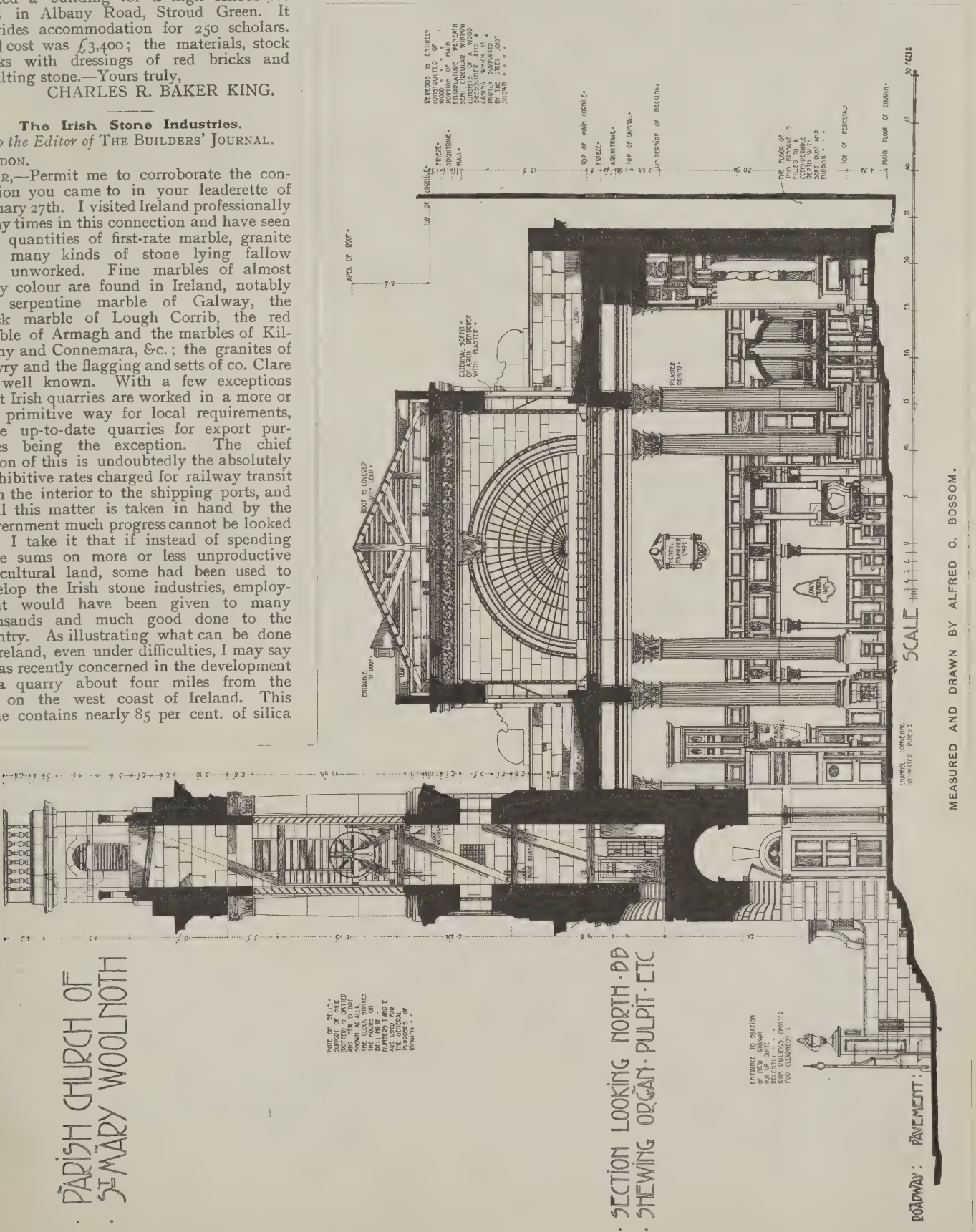
LONDON.
SIR,—The list of school buildings in the north district of London erected between 1875 and 1902, as printed in your issue for January 20th, is not quite so complete as it might have been. In the year 1889-90 I erected a building for a high school for girls in Albany Road, Stroud Green. It provides accommodation for 250 scholars. The cost was £3,400; the materials, stock bricks with dressings of red bricks and Doulting stone.—Yours truly,
CHARLES R. BAKER KING.

The Irish Stone Industries.
To the Editor of THE BUILDERS' JOURNAL.

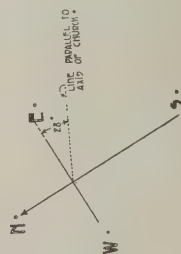
LONDON.
SIR,—Permit me to corroborate the conclusion you came to in your leaderette of January 27th. I visited Ireland professionally many times in this connection and have seen vast quantities of first-rate marble, granite and many kinds of stone lying fallow and unworked. Fine marbles of almost every colour are found in Ireland, notably the serpentine marble of Galway, the black marble of Lough Corrib, the red marble of Armagh and the marbles of Kilkenny and Connemara, &c.; the granites of Newry and the flagging and sets of co. Clare are well known. With a few exceptions most Irish quarries are worked in a more or less primitive way for local requirements, large up-to-date quarries for export purposes being the exception. The chief reason of this is undoubtedly the absolutely prohibitive rates charged for railway transit from the interior to the shipping ports, and until this matter is taken in hand by the Government much progress cannot be looked for. I take it that if instead of spending large sums on more or less unproductive agricultural land, some had been used to develop the Irish stone industries, employment would have been given to many thousands and much good done to the country. As illustrating what can be done in Ireland, even under difficulties, I may say I was recently concerned in the development of a quarry about four miles from the sea on the west coast of Ireland. This stone contains nearly 85 per cent. of silica

and is practically unsurpassed for flags, landings, setts, &c. The quarry was developed on a large scale and the stone transported to the harbour by steam trolleys. A small steamer was put on to carry the stone to England and bring back cargo, and the result has been a commercial success. If, however, the quarry had been situated further inland and dependent on railway transit this result would have been impossible.

When we come to think that vast quantities of marble, granite, &c., are sent to England from Italy, Belgium, Norway, Guernsey, &c., we must come to the conclusion that there is "something rotten in the State of Denmark" when Ireland is allowed to remain in such a position that she is unable to compete with these countries on at least equal terms.—Yours truly,
M. POWIS BALE.



LOMBARD STREET:

[illegible]

GROUND PLAN :

SCALE

MEASURED AND DRAWN BY ALFRED C. BOSSOM.

Keystones.

St. Philip's Church, Regent Street, is to pulled down.

A Ruskin Exhibition is to be held at the Manchester City Art Gallery, opening on March 23rd and closing on May 14th.

The Theatre Royal, Belfast, has been re-decorated by Messrs. Binns & Son, of Halifax.

Mr. Edwin T. Hall, F.R.I.B.A., will preside at the twenty-first annual dinner of the Incorporated Clerks of Works' Association on Monday, February 22nd.

A Series of Tennysonian Frescoes, painted by Mr. Wallace Hay, has just been completed in the great crescent-shaped dining-room at St. Pancras Station Hotel.

An Article on Compton Wynyates, illustrated with a number of very interesting photographs, appears in "Land and Water" for January 30th.

Royal Academy Lectures.—Dr. Murray, Keeper of the Greek and Roman Antiquities at the British Museum, will deliver lectures on sculpture on February 15th, 18th, 22nd and 25th.

The Old Ducal Palace at Mantua, now the Corte Reale, is threatened with destruction. The complete restoration of the building and of the Palazzo del Te is said to be absolutely necessary.

A new Parochial Institute at Potternewton, Leeds, was opened last Thursday by Lady Betty Balfour. The building has cost £4,000. Mr. Percy Robinson, of Leeds, was the architect.

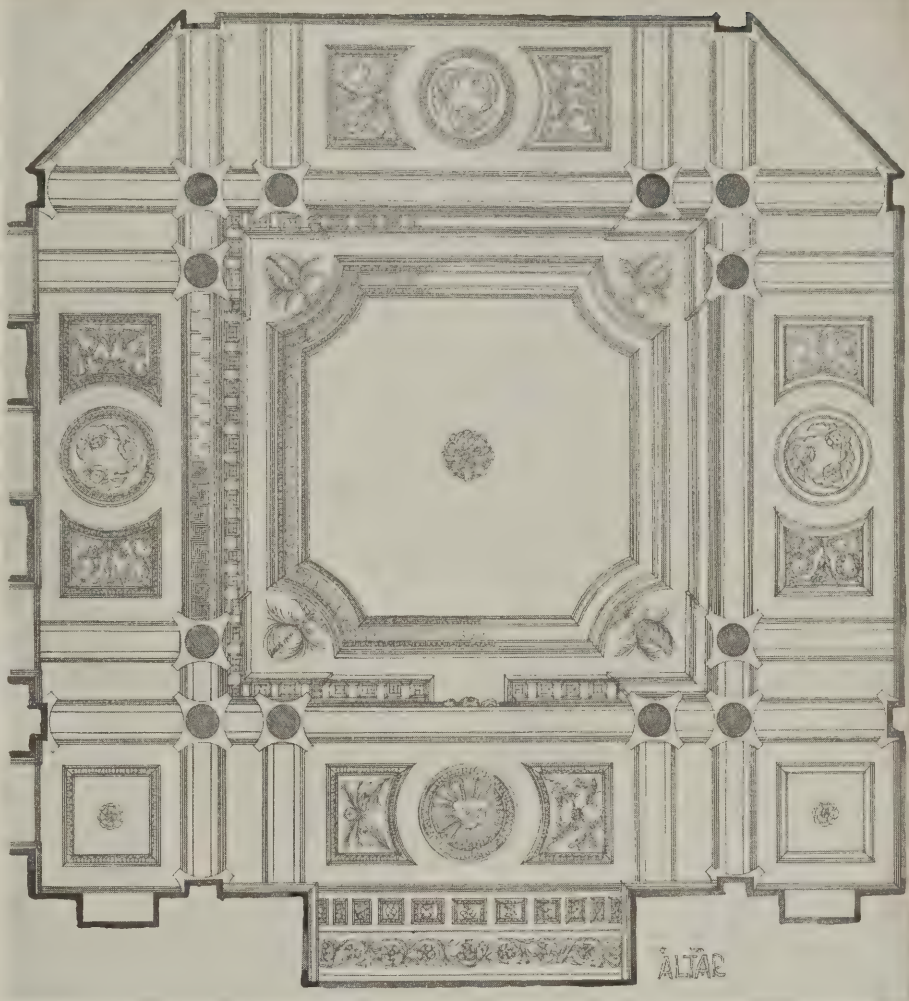
Carnegie Library for Walsall.—Mr. J. S. Gibson, the architect for the new Town Hall at Walsall, will be asked to submit a design for the proposed Carnegie Free Library, the cost, including furniture and fittings, not to exceed £8,000.

Competition for Inverness Town Hall Extensions.—Mr. Crawford has made the following awards in this competition:—1st, Mr. J. R. Rhind; 2nd, Mr. W. Mackintosh; 3rd, Messrs. Cameron & Burnett—all of Inverness. The cost will be about £3,000.

The Cartwright Hall, Bradford, is to be opened on April 12th. Structurally, the hall is already finished. The finial of the tower was erected some days ago, and beyond the completion of some decorative carving and the erection of the four great figures which stand upon the buttresses flanking the lantern of the tower the exterior of the building is complete. Mr. Simpson is the architect.

Manchester School of Architecture.—The Committee met last week and appointed Mr. Charles Rowley chairman for the year. It was reported that the number of students was satisfactory. The committee is composed of representatives of the Victoria University, the Manchester Society of Architects and members of the Education Committee in equal parts. Professor Capper is the head of the department.

New Bank Premises at Middlewich, for the Birmingham District and Counties Banking Co., Ltd., have been erected in Wheelock Street. Mr. Ernest E. Shepherd, of Nuneaton, was the architect. The accommodation consists of bank and residence. The bank itself is on the ground floor, at the rear of which is the manager's private-room, strong-room and lavatory accommodation for the staff. The building is faced with Huncoat bricks and Hollington stone dressings. The main contract has been carried out by Messrs. Birchall Brothers, of Middlewich, the decoration and lighting by Mr. O. Whitehead, the fittings, &c. (in mahogany), by Mr. H. Cambridge, grates and ironmongery by Messrs. Parsons Sherwin & Co., and the lift by Messrs. Waygood & Otis. The total cost has been about £2,100.



PLAN OF CEILING, ST. MARY WOOLNETH, LOMBARD STREET, E.C.
MEASURED AND DRAWN BY ALFRED C. BOSSOM.

Kingsway will have an avenue of planes alternating with ailantus, and Aldwych will be shaded by planes and acacias.

A Periodical dealing solely with Architectural Competitions is proposed to be published by Mr. Koch.

Northern Architectural Association.—A reprint in pamphlet form of the interesting presidential address delivered last November by Mr. J. Walton Taylor, F.R.I.B.A., has just been issued.

"The House Beautiful."—Under this title "The House" commences a new era. The first number contains much useful matter, and there are many interesting illustrations. (Publishing office, 2, Finsbury Square, E.C., monthly, 6d.).

Interior Woodwork in England.—Mr. Henry Tanner, jr., A.R.I.B.A., read a paper on this subject before the Liverpool Architectural Society last week. He dealt chiefly with domestic woodwork of the Renaissance period. The influence of Italian and other craftsmen in developing the treatment of woodwork was traced, and various examples were given of panels, doors, staircases and screens in many old halls and mansions throughout the country.

New Schools at Oxford.—On January 26th the Bishop of Oxford laid the foundation-stone of the new schools of St. Thomas. The buildings are to be of red bricks, stone, rough-cast and tiles, and will comprise two halls, classrooms, teachers' rooms and cloak-rooms. Accommodation will be provided for 400 children. The builder is Mr. J. Wooldridge, of Oxford, and the architect Mr. Philip A. Robson, A.R.I.B.A., of Bridge Street, Westminster.

The Statue of Queen Elizabeth on St. Dunstan's-in-the-West, Fleet Street, has been restored.

Walkley Branch Library Competition, Sheffield.—Sir William Emerson has made the following awards in this competition:—First, Mr. H. L. Paterson; second, Mr. Joseph Norton; third, Mr. H. I. Potter—all of Sheffield. Mr. Paterson's plans have been accepted.

Architects' Registration.—The following table shows the present attitude of the allied societies in regard to the proposed registration of architects:—

For.		Neutral.
Birmingham	Manchester	Aberdeen
Bristol	Northern A.A.	Devon and Exeter
Cardiff	Nottingham	Edinburgh
Dundee	R.I.A., Ireland	Glasgow
Leeds	Sheffield	Leicester
Liverpool	York	

Broadwood's Pianoforte Factory.—A Press visit was paid last week to the new pianoforte factory of Messrs. John Broadwood & Sons, Ltd., at Old Ford, E. The factory covers an acre and a half of ground, and consists of a rectangular building of four floors, divided into four separate parts as a precaution against fire. There is also a long range of single-floor buildings, wherein are situated the engineering shops, and two sawmills and drying-rooms. The plant is thoroughly modern in every particular, and electricity is used extensively both for power and light. In the yard is an electric crane for handling timber, also a large pneumatic dust exhaust (driven by a 5-h.p. motor) for collecting shavings and sawdust from the woodwork shop and sawmill. Mr. Eugène Beaumont, F.R.I.B.A., was the architect of the factory and Messrs. Grover & Sons were the builders.

COMPETITION REFORM SOCIETY.

THE second annual report states that one of the most satisfactory features of the past year has been the very decided evidence of the recognition of the Society throughout the country. Altogether, sixty-seven competitions were dealt with, in many cases with successful results. The committee is engaged on drawing up a model set of suggestions for the conduct of architectural competitions, and it is intended to call a general meeting to discuss the matter at an early date. The annual subscription is proposed to be raised to 10s. 6d.

Competition for Isolation Hospital, Seattle.—The committee disapproves of the existing conditions because (1) there is no professional assessor; (2) the decision of the Council as to the plan selected is to be final, and they do not bind themselves to accept any plan; (3) the architect whose plans are accepted will be employed to carry out the work on terms to be arranged previous to the commencement of the building; (4) there are no premiums. Members are requested to abstain from competing unless the conditions are satisfactorily revised.

THE VENTILATION OF LABORATORIES.*

EVEN at the present time the science and practice of ventilation is only imperfectly understood. Its progress almost entirely depends on the careful observation of the effects obtained in various buildings, whether the results are exactly those aimed at or not.

The great need there always is for efficient ventilation in chemical laboratories is obvious to everyone.

The ventilation of both the laboratory and the lecture-room can be considered under (a) the general ventilation and (b) the special or local ventilation. The former is the process of removing the air rendered impure by persons or lights and replacing it by fresh air, while the latter is the process of carrying away all the fumes, &c., evolved during the experiments. If these fumes are not drawn off, they gradually diffuse through and vitiate the whole atmosphere of the laboratory. Means of extraction should be provided at various points throughout the room and as near as practicable to the sources of the fumes.

In "natural" ventilation, the movements in the building ventilated are principally due to difference in weight of equal volumes of air. Having to depend on these ever-changing variations of air-pressure, natural ventilation is too uncertain, irregular and feeble for chemical laboratories. With ventilating radiators the tendency will be for a supply of fresh air to be drawn in as long as they are in use. An open fire is not a very satisfactory way of warming even a small chemical laboratory, although it is always extracting air from the room.

If the fuel is coal it requires constant attention and causes dust, ashes and smoke, while a gas-fire is more expensive and the fumes from it may be troublesome. Nevertheless, gas-fires are frequently utilized in small school laboratories, probably because gas is also required on the benches.

Artificial systems of ventilation can be separated into two classes according to whether the movement of the air is brought about by heat or by mechanical means. Heat for this purpose may be obtained from a furnace, gas-burner, hot-water or steam pipes, &c. A large number of chemical laboratories are ventilated by aid of the heat

of a furnace. Gas-jets in flues are also frequently used to extract fumes.

One advantage of employing the plenum system in a chemical laboratory is that the air within the room is under a pressure slightly in excess of that outside, hence fumes in the draught-closets are more likely to pass through the vent-flue into the outer air than to enter the laboratory.

For the special ventilation of chemical laboratories it is best to employ enclosed centrifugal fans. It must not be forgotten that the fumes will act upon the blades and axis unless special precautions are adopted. Great care must be taken in planning and constructing the fume-ducts to avoid unnecessary friction; internal smoothness and absence of sharp bends and enlargements are essential.

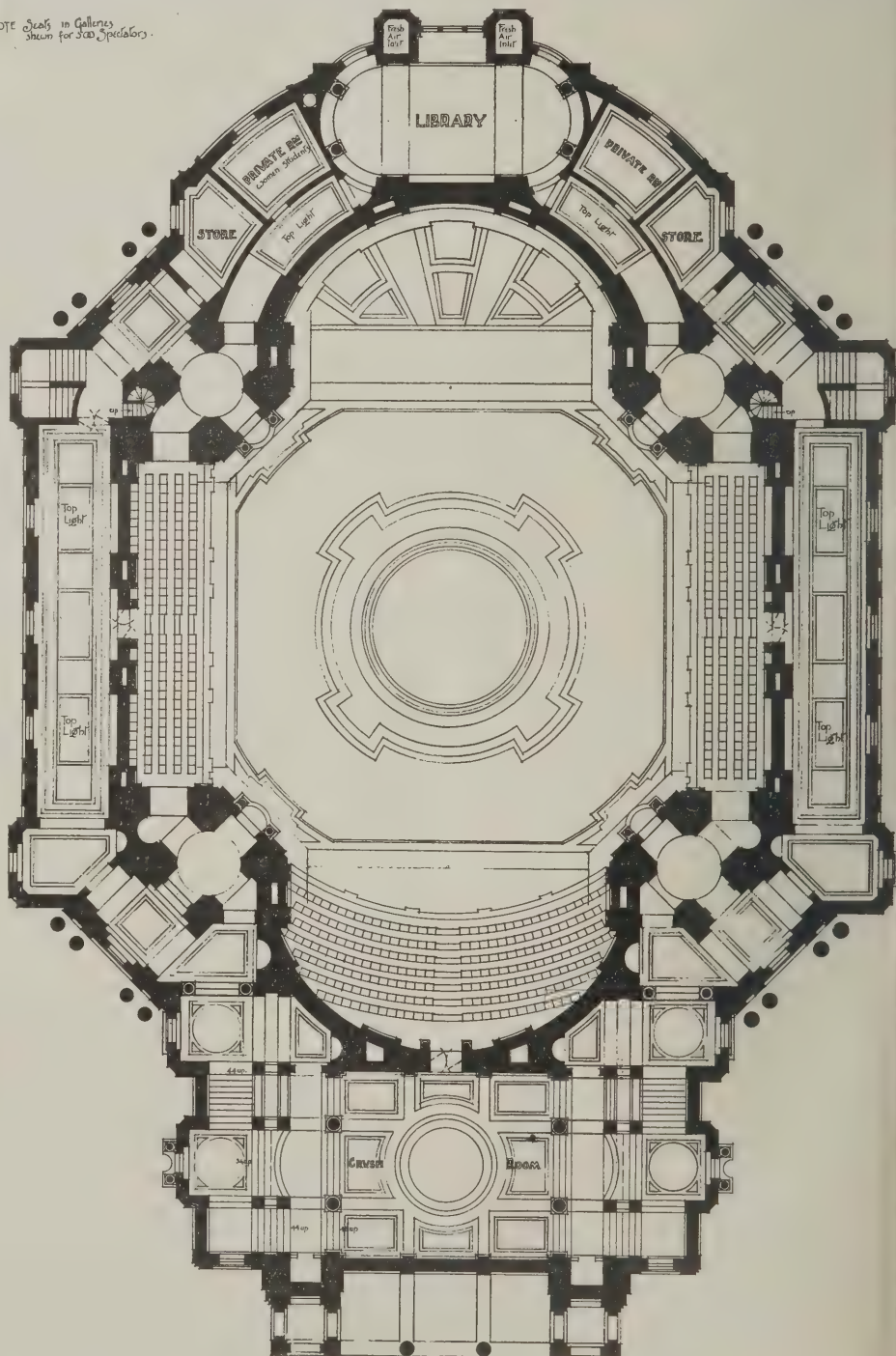
Occasionally draught-hoods are provided on the benches; these are intended to immediately carry away all fumes from the

benches. The flues from these hoods require careful planning in order to get an equal pull at each point. Ordinary draught-closets are of such a size that experiments can be conveniently carried on entirely within the entrance. Difficulty is sometimes experienced in getting an up-current in a number of draught-closets with separate flues; the risk is that some of the flues will act as inlets to the room, hence the advantage of connecting all the closets to one or two outlets in which fans are placed.

Combustion-benches generally have hoods over them to collect the currents of hot air and vapours and to conduct these to the flues.

In the chemical lecture-room it is desirable that there should be some special ventilation in addition to the general room ventilation, such as downdraught flues fitted into the lecture-table or a draught-closet in the back wall of the room.

Note: Seats in Galleries shown for 300 Spectators.



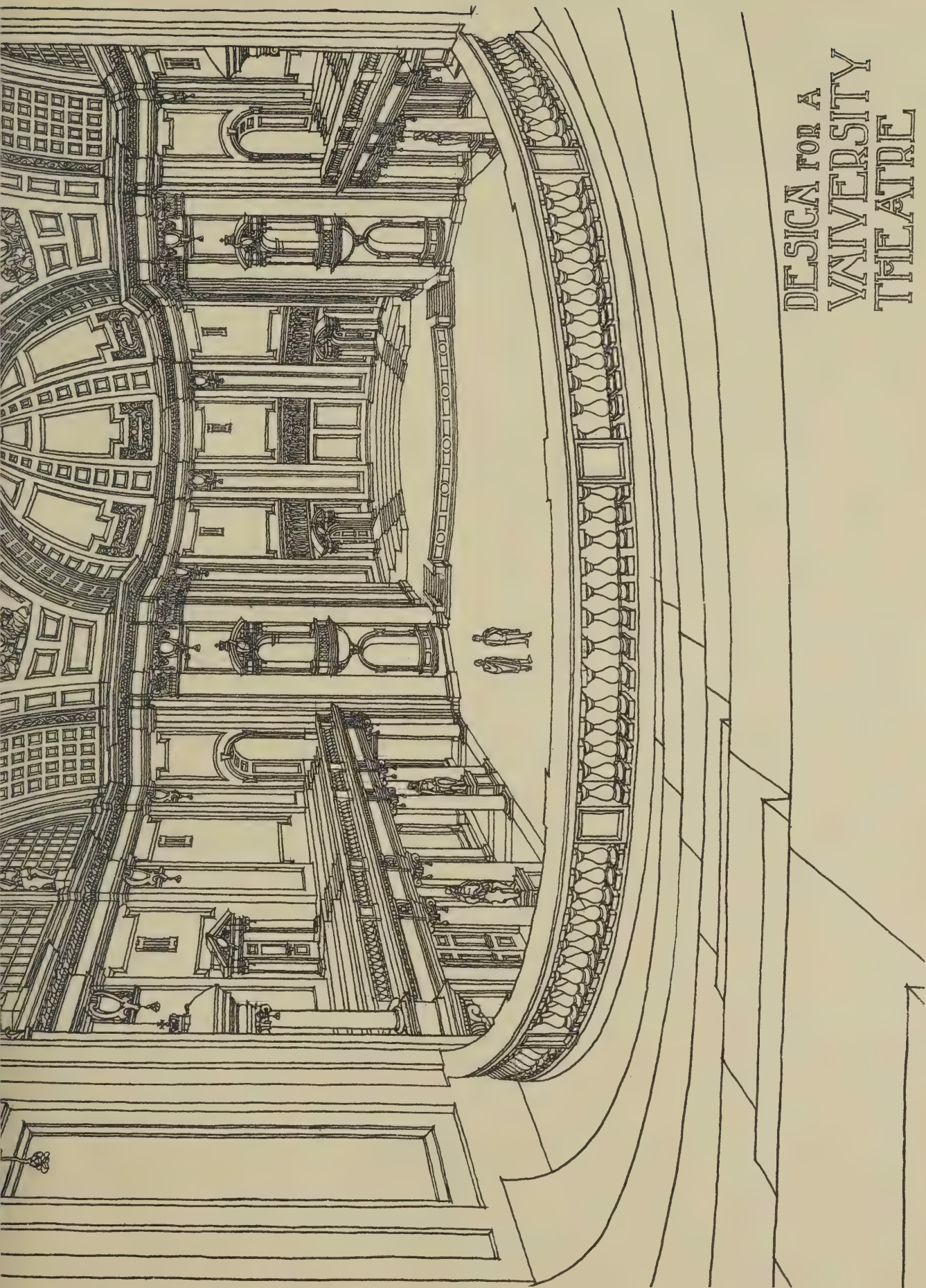
FIRST FLOOR PLAN

0 10 20 30 40 50 60 70 80 90 100 Feet
SCONE MEDALLION PRIZE DESIGN, BY FREDERIC J. NORTH.

* Abstract of a paper read before the Architectural Association (Discussion Section) on January 27th, 1904, by Mr. T. H. Russell, M.A. (author of "The Planning and Fitting-up of Chemical and Physical Laboratories").

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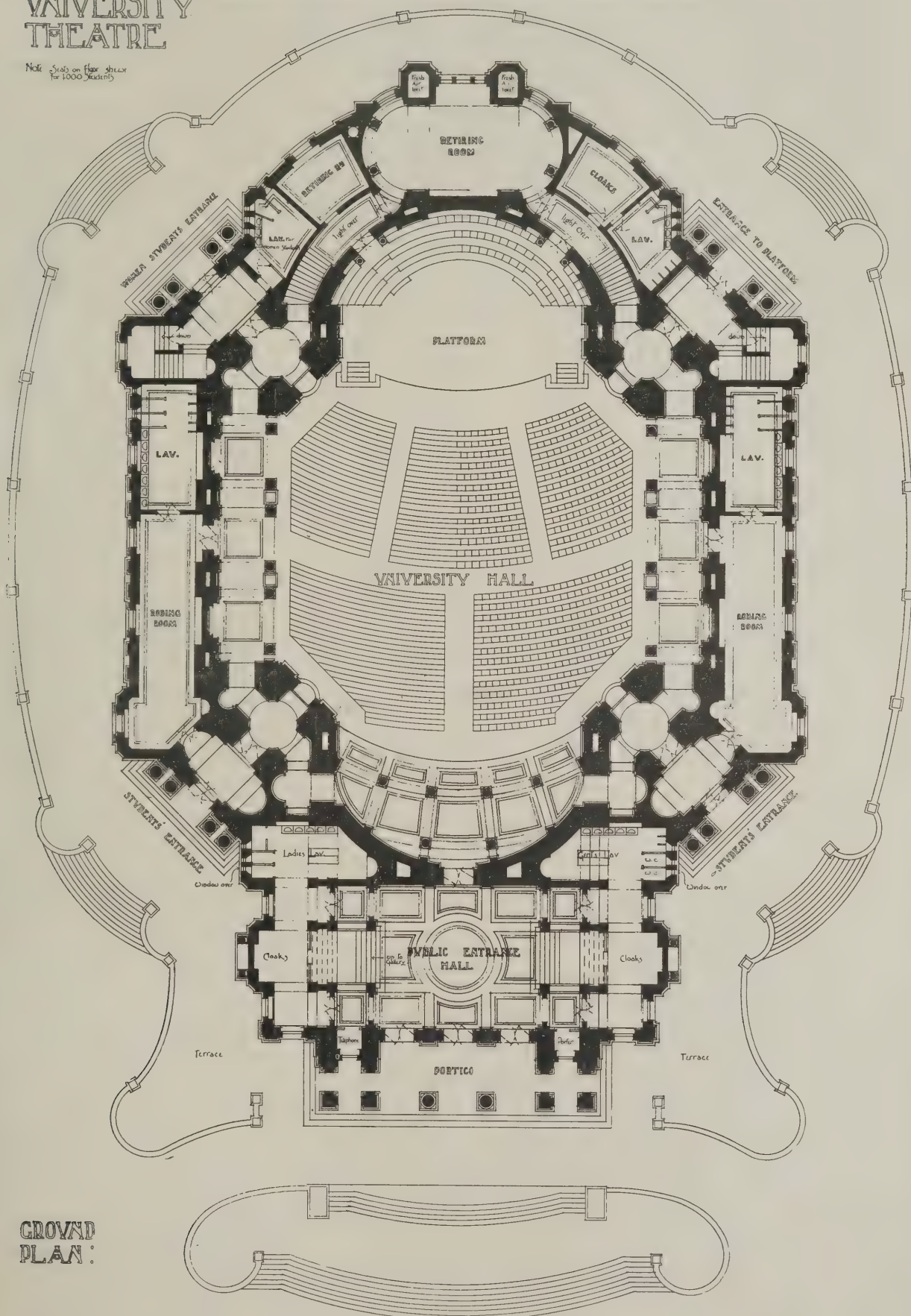
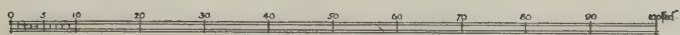
DESIGN FOR A
UNIVERSITY
THEATRE

SOANE MEDALLION PRIZE DESIGN, 1903-4. BY FREDERIC J. HORTH.

LIBRARY
OF THE
UNIVERSITY OF ILLINOIS

DESIGN FOR A UNIVERSITY THEATRE

Note: Seats on floor shown
for 1000 students



GROUND
PLAN:

SOANE MEDALLION PRIZE DESIGN, BY FREDERIC J. HORTH.

Builders' Notes.

Newcastle Dispute Settled.—The dispute in the Newcastle district between the bricklayers and plasterers and the masters has been settled.

The Additions to the Calverley Hospital, Bradford, are being warmed and ventilated by means of Shorland's patent double-fronted Manchester stoves with descending smoke flues, Manchester grates, patent exhaust roof and inlet ventilators, supplied by Messrs. E. H. Shorland & Brother, of Manchester.

Reduction of Wages in the North.—The Tees-side Master-Builders' Association, which comprises Stockton, the Hartlepoons and Middlesbrough, have given notice of a reduction of 1d. per hour in the wages of bricklayers, joiners and plasterers, $\frac{1}{2}$ d. for bricklayers' labourers and $\frac{1}{4}$ d. for plasterers' labourers. The notice, which includes some alteration of rules, expires on April 30th.

Foreign Slates.—The Building Committee of the Sunderland Corporation have condemned the use of foreign slates at present being imported, as not being strong and durable as required by their by-laws.

"The Re-development of the Slate Trade in Ireland"—a paper read before the Institution of Mining Engineers last July by Mr. G. H. Kinahan—has just been published in pamphlet form.

Mr. Scott - Moncrieff's Sewage - testing Apparatus can now be seen in the Parkes Museum, Margaret Street, W. The apparatus has been designed for the purpose of obtaining exact information upon which to base bacterial sewage-disposal schemes, particularly as to (1) the depth of filter required to produce the necessary standard of purity in the effluent; (2) the quantity of air necessary for the life processes of the organisms in the filter; (3) the correct rate of flow per unit of filter-bed surface in order to obtain the best results; and (4) the best period of rest

between each discharge to prevent gelatinous growths in the filtering material. The apparatus is the subject of much interest among sewage experts, and is now being adopted as the only means available for obtaining accurate data.

At the Chancery Lane Safe Deposit new strong-rooms are to be built. The steelwork has been carried out by Mr. John Tann, of Newgate Street.

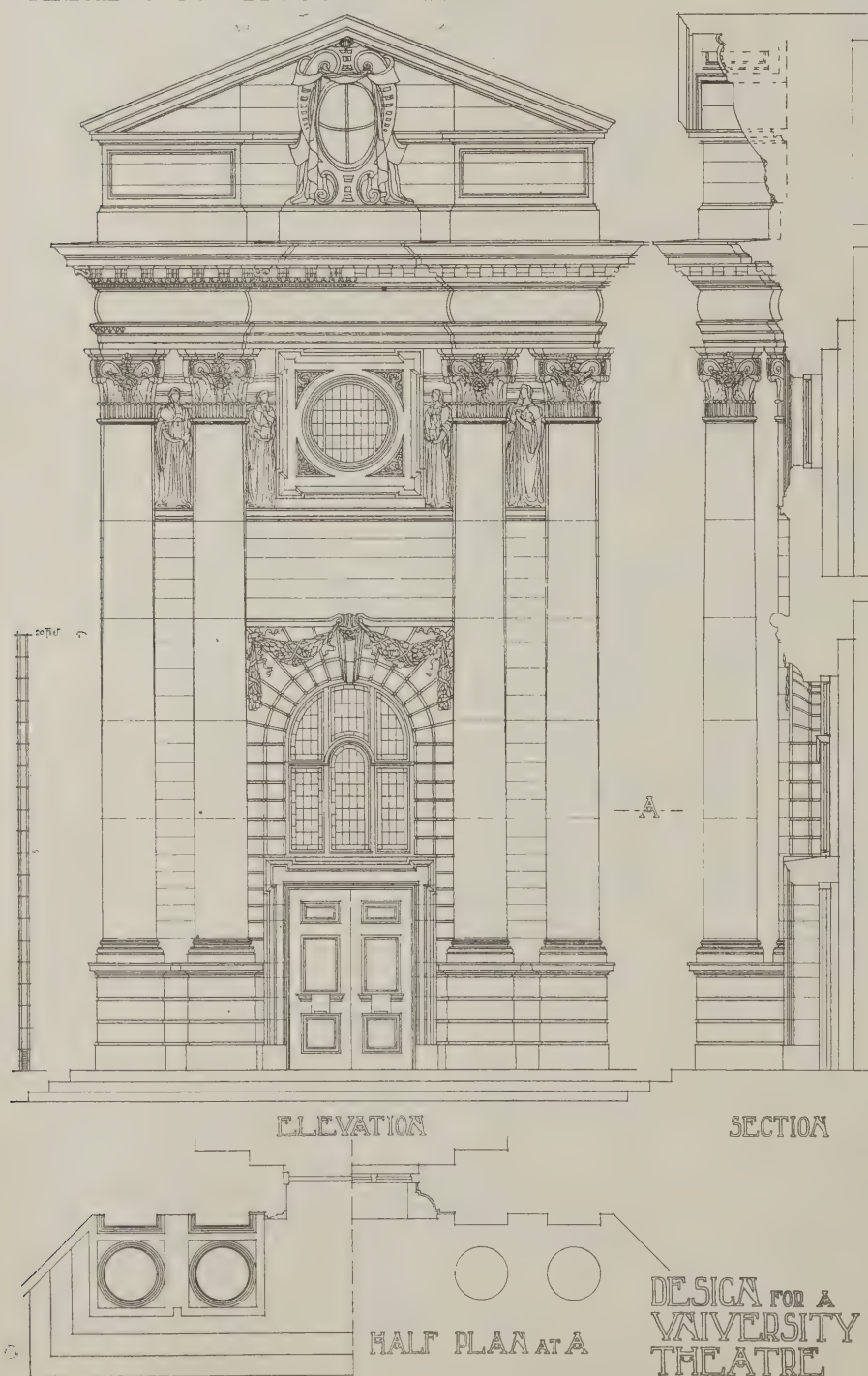
Alterations in Quantities.—The Markets Committee of the Manchester Corporation has resolved—"That it be an instruction to the city surveyor and city architect that in any contracts for works or buildings for this committee no alterations or additions be made to the bills of quantities or specifications without such suggested alterations being first made to the chairman of the Markets Committee in writing, and the written sanction of the chairman being obtained thereto, the chairman himself reporting to the next meeting of the committee."

Ventilation.—At the recent provincial meeting of the Sanitary Institute held at Manchester the ventilation of dwellings, workshops, hospitals and schools was discussed. Mr. Edwin T. Hall, who introduced the question, said that no one system of ventilation was suitable for all types of buildings. He advocated a system of heating by propulsion for theatres. In factories there should be no lifts or staircases within the walls, because they became ducts, bringing foul air up from the lower floors. For schools it was desirable to have the assembly halls isolated from the classrooms, and the latter should be on one side only of the corridor.

Ventilation of the Musée du Louvre, Paris.—By direction of the French Government, Messrs. Robert Boyle & Son, ventilating engineers, of London and Glasgow, have prepared plans for the ventilation of the Musée du Louvre, Paris, with the "Boyle" system (natural). It is also proposed to apply the "Boyle" system to the Chamber of Deputies, the mechanical systems tried in that building, including the plenum, having proved failures. The "Boyle" system has been successfully applied to the Spanish Cortes, Madrid. It was this system which gained the highest award for ventilation at the last Paris Exhibition.

A Fire Test with Uralite.—On Monday last, at the request of a number of experts in building materials, the British Uralite Co., Ltd., carried out a fire test of their new material Uralite in the cement works of Messrs. Currie & Co., Ltd., Cathcart Street, Kingston, Glasgow. The test consisted of a platform constructed of timber, part of which was covered with Uralite, the other part being left bare. A timber framed structure was erected covered with Uralite on both sides. A wooden box covered internally and externally with Uralite was fixed on an iron frame and placed in the midst of the fire. The fire was lit, and burned for the space of one hour very fiercely, a temperature of 2,000 degs. Fahr. being registered by a pyrometer. The unprotected portion of the platform was destroyed in fourteen minutes, but the portion protected by Uralite remained intact and was able to carry the weight of men standing upon it after the fire was subdued. The wooden framework was opened out after the test in the presence of the spectators, and it was shown that the Uralite had protected the woodwork and entirely prevented the passage of fire. The box was opened, and the contents handed round absolutely uninjured. The test was witnessed by Government officials, river officials, shipbuilders, fire-insurance experts, architects, builders, contractors, brewers and maltsters, and representatives from the various public bodies in the City.

DETAIL OF STUDENTS ENTRANCE



SOANE MEDALLION PRIZE DESIGN, BY FREDERIC J. HORTH.

ARCHITECTURAL ASSOCIATION.

Cottage Homes at Bournville.

A MEETING of the Architectural Association was held on Friday evening last, the chair being occupied by Mr. Arnold Mitchell, vice-president.

The following additional donations to the New Premises Fund were announced:—

	£	s.	d.
Mark Fawcett & Co.	-	-	21 0 0
J. K. Hunter	-	-	2 2 0
Arthur J. James	-	-	2 2 0
R. Douglas Wells	-	-	2 2 0
A. E. Ancombe	-	-	1 1 0
A. Campbell	-	-	1 1 0
F. G. Christmas	-	-	1 1 0
B. Dicksee	-	-	1 1 0
A. Ebbs	-	-	1 1 0
Horace Barry	-	-	1 1 0

Messrs. L. F. Jones, W. S. Gorrings, W. Acworth, W. W. Scott-Moncrieff, H. J. Merriman, J. S. Courtauld and J. L. Fouracre were elected members of the Association.

It was announced that £750 had been bequeathed to the Association by the late Mr. H. Saxon Snell for the foundation and maintenance of a triennial scholarship.

A paper on "Cottage Homes" was read by Mr. W. A. Harvey, the architect of Messrs. Cadbury's village of Bournville, outside Birmingham. Summarized, Mr. Harvey said:—

When the village was handed over to the trustees in December, 1900, about 350 cottages had been erected, and since then it has steadily grown to the present total of more than 500 houses. Most of those built before 1901 have two sitting-rooms, a scullery, three bedrooms and the usual conveniences. Larger ones of later date have four, five and six bedrooms and a bathroom supplied with hot and cold water. During the last two years several cottages have been built with one large living-room instead of two smaller ones, a scullery with bath sunk in floor or disposed of in other ways to economize space, three bedrooms, and in some cases an attic. Others are now built with two bedrooms, for small families.

There is an average garden space allowed each house of 600 sq. yds., which is found to be as much as one man can attend to. The rents range from 5s. 6d. a week (rates included) to 12s. (rates not included), and there are a few houses of a larger class at higher rentals. The village is served by Birmingham with gas, water and sewers, the rates being about 6s. 6d. in the £, exclusive of water rate.

Although much has been said of higher percentages, 4 per cent. on the outlay is the most that should be expected in building houses of this class. The profit on the outlay is often exaggerated, and it may be well to point out that 6 per cent. gross will rarely pay 4 per cent. nett, as is often stated. It is true that a greater profit may be made by erecting houses in endless rows to an unsightly stock pattern; but I strongly urge that the only legitimate way of diminishing cost is by the avoidance of unnecessary ornament and by the advancing of a pleasing simplicity.

The General Scheme.

In building a street of houses the expense would of course be very great if, to get variety, we employed a different plan and different details for each house. We have to recourse to other methods. In the case of fifty houses I might suggest getting as many details the same as possible, such as windows, doors and door-frames (or, at any rate, half of one kind and half of another), avoiding the monotony by a variation of the disposition of these features. An extensive elevation may also be made interesting by the treatment of a porch here, the addition of a bay window there and the use of rough-cast somewhere else. Go in for the most irregular

building line you possibly can. In a block of three cottages a pleasing effect is gained by projecting or recessing the middle one, or putting one the long way on and so forming a forecourt.

To say that care should be taken to well ventilate floors is almost a platitude; nevertheless this is sometimes overlooked in the effort to save a trifling expense, in spite of the fact that in the long run, when dry-rot sets in, a considerable expense is inevitable. There should be a bed of concrete over the whole site, and plenty of air-bricks should be employed to thoroughly ventilate ground-floor joists, and the same (or whatever ground-work is used under joists) should be, if possible, above the level of the ground round the house. This prevents any chance of water collecting under floors.

My object being to deal with cottages costing from £175 to £750, I take first the accommodation of

One of the smallest types,

erected in blocks of four:—

Ground Floor:—

Living-room, 13ft. 6in. by 12ft. 6in.
Scullery, with cabinet bath, 10ft. 6in. by 7ft.
Larder under stairs.
Coals and water-closet.
Small paved yard.
Lobby.
Size of garden, 600 sq. yds.

First Floor:—

Front bedroom, 13ft. 6in. by 12ft. 6in.
Back bedroom, 16ft. 6in. by 7ft.
Small linen closet.

Total cost, including laying-out of garden and all extras, £175 per house.

Estimated nett return, £7 per house, equivalent to 4 per cent.

Cubical contents, 8,023ft. per house at 5½d. per ft. (in 1903) = £175.

At Bournville 8 per cent. gross yields about 4 per cent. nett.

This type is of the smallest possible dimensions and simplest construction; the roof runs uninterruptedly from end to end, and the building throughout is of a very inexpensive character. In this class of design every simplicity should be studied: unnecessary roof complications should be avoided, and the chimneys, in order to diminish trimming, flashing, &c., should be grouped together and brought to the highest point of the roof to avoid draughts and smoky flues. If efficient ventilation is provided it is not essential that each bedroom should have a fireplace. Nooks and recesses doubtless make a room interesting, but in small cottages of this kind they are too expensive to introduce and, instead, the best must be made of materials, colour and proportions if we are to secure 4 per cent. on the outlay.

Roofs and Outbuildings.

A very important point to emphasize regarding cottages of all sizes is compactness of plan, and there should be an aim at getting wall-lines as long and as unbroken as possible. Where practicable all outbuildings should be arranged under the main roof, otherwise when cottages are semi-detached one of them must suffer through the projecting roof of the other. This precaution also admits of a better view of the garden from the living-rooms, and the glimpse of green is no small consideration in the building of cottage homes. Care should be exercised in the planning of corner cottages to avoid the yard being exposed to the road, and where necessary it should be enclosed—so as to keep the week's wash away from public gaze.

It should be remembered that the position of the larder, which when possible should be north or north-east, is of no small domestic importance.

Another type

is as follows:—

Ground Floor:—

Living-room, 17ft. by 16ft., with ingle-nook and bay.
Scullery, 13ft. by 10ft. 6in., having bath sunk in floor.
Larder, 5ft. by 6ft.
Coals, water-closet and small paved yard.
Verandah in front.

First Floor:—

Bedrooms, 17ft. by 13ft. 6in., 8ft. 6in. by 9ft. 6in. and 13ft. by 8ft. 6in.
Small box cupboard.
Attic, 16ft. by 17ft.
Total cost, about £300.

In view of the advantage of one spacious and healthy living-room over the parlour plan, this class of cottage has been largely introduced at Bournville.

I consider that the heights of 8ft. 6in. for ground floor and 8ft. for bedrooms are quite adequate for the average cottage, so long as sufficient ventilation is provided. Floor-space is the most important consideration in the economic building of cottage homes. I might say here that

the cottage with the long sloping roof,

of which there are many examples at Bournville, has one great advantage, for if the front walls were carried up level with the ceiling line of bedroom, besides the building suffering in lack of proportion the expense of extra brickwork would be considerable. Generally speaking, the height of bedrooms to the point of intersection of the roof and wall need be no more than 5ft. 6in. Ample ventilation may be got by the simple insertion of a 9in. by 7in. air-brick in the outside wall and a tobin tube within, about 5ft. 6in. from floor, the cost of the latter being only about three shillings.

Baths.

The cottage is not of a size to admit of a bathroom, so that the bath has to be sunk in the floor of the kitchen near the hearth, which is covered by what may be used as a standing or draining board, or, if sufficient room, not sunk, but covered by what can be used as a settle or table. In some cases the patent adjustable bath has been used, being hinged at one end in order that it may be raised and lowered from a cabinet, the upper portion having shelves and forming a cupboard, where it is kept in a vertical position, much room being saved thereby; the cost is about £3 5s. In other cases the admirable arrangement of Corne's combined scullery-bath-range and boiler has been introduced, which I can well recommend. The patent utilizes to its fullest extent the heat of the kitchen, and while a great economy of space is effected there is considerable saving of fuel to the householder. The heating and cooking range forms a great part of the division between the kitchen and scullery-bathroom, the flue being coursed over the head of the bath. In the centre of the range is the grate, with an oven on one side and a 12-gal. boiler (in which water is kept hot for domestic purposes) on the other. Boiling water can be obtained by raking down live fuel into a small secondary grate under the boiler through a small hole made for the purpose. Clothes can be boiled in the boiler, access to which from the scullery is gained by opening a curved door, and further developments have been made in the way of providing a folding door in front of the range which will shut off the boiler from the kitchen when necessary. The scullery-bathroom, which contains about 36ft. super., is fitted with a full-sized iron enamelled bath, supplied with hot water by a pipe from the range boiler and with cold water from the cistern or through a shower-bath sprinkler fixed overhead, so that this latter luxury can be enjoyed by simply turning the tap.

I have found the introduction of White's patent steam exhaust advantageous and efficient in preventing steam permeating other rooms.

A Cottage that Pays 4 per cent.

The following is an example of a cottage where a clear 4 per cent. is made on the outlay. A large number have been built to this plan at Bournville. The accommodation is:—

Ground Floor:—

Parlour, 13ft. 6in. by 11ft. 3in., and bay.
Living-room, 14ft. 6in. by 11ft. 9in.
(French window).
Kitchen, 12ft. 3in. by 10ft. 6in.
Larder, 6ft. by 6ft. 3in.
Porch and hall, and cloak space under stairs.

Tools, water-closet and coals, enclosed yard, and 600 sq. yds. garden.

First Floor:—

First bedroom, 13ft. 6in. by 11ft. 3in.
Second bedroom, 14ft. 6in. by 11ft. 3in.
Third bedroom, 10ft. 6in. by 8ft. 3in.
Bathroom (hot and cold water).

Total cost, including laying-out of garden and all extras, £395 per house.

Estimated nett return, £16 per house, which is equal to 4 per cent.

Cubical contents, 26,885ft. at 5 $\frac{3}{4}$ d. = £404.

The Hearth

is worthy of the architect's most careful attention, even in the smallest cottage. Fire-places I consider suitable for the six-roomed cottage are as follows:—For front room, interior, slabbed surrounds, tiled hearth and white wood chimney-piece; dining-room, iron tiled mantel-sham; kitchen, 3ft. range, with white-tiled coves and York stone shelf and trusses; front bedroom, 30in. mantel-sham and tiled hearth; back bedrooms, 24in. mantel-sham and tiled hearth; the total cost of the whole amounting to £12.

I should like to say a word in favour of the casement window. It is not only cheaper than the sash window, but if in the building of a small cottage beauty of effect is demanded it is expressly cheap. The old difficulty of cleaning may now be obviated by the very simple device of pivoting the window in the centre.

A good window-sill is formed of calf-nosed bricks set on edge in cement, with two courses of tiles beneath, which forms a drip under sill, and a backing of slate, also in cement. By bringing the window-frame forward to reduce the size of the top of the sill, two curses of small property—damp and driving in of rain at this point—are prevented.

Single Cottages.

The following is the accommodation of a single cottage:—

Ground Floor:—

Drawing-room, 13ft. 6in. by 12ft. 9in., and bay.
Dining-room, 13ft. by 13ft., and bay.
Kitchen, 10ft. 9in. by 10ft.
Scullery, 7ft. 6in. by 10ft.
Larder.
Porch and hall, cloak space under stairs.
Coals and water-closet.

First Floor:—

First bedroom, 13ft. 6in. by 17ft.
Second bedroom, 13ft. by 11ft.
Third bedroom, 12ft. 3in. by 10ft.
Dressing-room, 7ft. 6in. by 7ft. 6in.
Cupboards.
Bathroom, with water-closet and lavatory (hot and cold water).

Total cost (1899), about £600.

The following accommodation is of a larger class of cottage:—

Ground Floor:—

Drawing-room, 11ft. 9in. by 13ft. 6in., with 4ft. 9in. by 10ft. single and bay window.
Dining-room, 16ft. by 13ft. 6in., and bay.
Kitchen, 12ft. by 10ft.
Scullery, 9ft. 6in. by 9ft. 6in.
Larder.

Water-closet and coals, and tool-house.
Porch, hall and small cloak space.
Frontage, 15yds.

First Floor:—

First bedroom, 16ft. 6in. by 12ft.
Second bedroom, 12ft. 6in. by 13ft. 6in.
Third bedroom, 13ft. 6in. by 9ft.
Fourth bedroom, 10ft. by 10ft. 6in.
Box-room, 9ft. 6in. by 8ft. 3in.
Bathroom.

Total cost (1899), about £650.

My object in mentioning these different accommodations is to show what can be provided in the way of substantial dwellings for the amounts stated.

Wall Decoration; Bricks; Ridging.

As to wall decoration in interiors, for small cottages I have found it advisable to use papers instead of colour-wash, as the latter is very soon soiled by children. In the better houses a colour-wash may be at first used and a paper added later, with a frieze. A good effect is also obtained by bringing down the white from the ceiling as far as the picture rails; these latter should be placed in the smallest houses, if only to save the plaster. I generally place them level with the top of the door architrave.

With regard to bricks, as far as possible I avoid those which are mechanically made (the pressed stock brick) and use the brindled Staffordshire ones. They are more suitable for cottage building, because a pleasing variety of colour is introduced at a low cost, the tints being a bright cherry red, blended with purple and blue—the last of which is quite different from the indescribable vitreous blue. I prefer to use hand-made roofing tiles and thick Welsh green Precelly slates, and occasionally the rustic peggies.

Roof-ridging, though seemingly a small matter, should have careful attention, and in my opinion it is wiser to suppress the same rather than to sharpen it, for by so doing a much-desired homely appearance is given to the cottage. Many fantastic ridges, with vulgar finials, are employed in the building of small suburban villas, of a more or less sharp pointed character and of a depth out of proportion with the roof. With the principle in view that the skyline should be softened as much as possible, I invariably use the brindled hand-made half-rounds. With green slates I use blue ridges, as being the most suitable colour and one which defines without undue severity.

There is a strong temptation to introduce a variety of colours upon exteriors, but with cottages of the class I deal with it is advisable to refrain from doing so. My experience has been that it is best to get the colour in masses, treated broadly, not in bits—say, each house of one colour; for where the cottages stand close together, or even where they are semi-detached, the contrast or relief is borrowed from the neighbouring one, and in the case of a village a much better general effect is thus gained. With whitewashed houses a tarred plinth of about 2ft. is pleasing and prevents the rain and mud splashes from being seen.

Walls: Half-Timber.

With regard to the thickness of walls, my opinion is that a 9in. wall outside is quite sufficient and is to be preferred to the cavity wall. South-west fronts should be protected by overhanging eaves, but where this is impossible the face should be whitewashed, by which not only is damp largely prevented but an effective appearance gained.

As to general timber, I might say that I have used common building red deal, the joinery being of seconds and thirds Archangel, and where larger timber is required the ordinary pitch-pine. Oak is advisable for weather-boarding and sills.

Half-timber for exteriors I do not recommend. District councils insist on a 9in. wall being at the back; thus not only is its use false art but an unwarranted present and

future expense; besides, an effect equally as good is obtained with rough-cast or white-wash. Half-timber one lives to regret, for the weather tells sadly, and it demands constant repair.

The Garden.

A garden arrangement largely adopted is as follows:—At the bottom are eight apple and pear trees and fruit trees, which, besides being reasonably expected to bear fruit, form a screen between houses which are back to back. The paths are made of 6in. of ashes and 3in. of gravel. The position of the grass plot and ornamental bed at the top permit a little soothing green and flash of colour to be seen from within the house.

Tool sheds should be erected beyond the outhouses, not only because of their usefulness but as a means of preserving the appearance of the back. If these are not supplied, the tenant invariably knocks up a disorderly apology from Sunlight Soap cases, and it is best to forestal him.

Given a plot of land upon which four houses are to be erected, it is advisable, in order to more equally distribute the garden space, say, of about 500 or 600 sq. yds. per house, to spread them laterally by arranging the staircase not between the rooms but between the houses, thus widening (not lengthening) the building. This, bringing the remote houses nearer the extremity of the land, not only gives the garden plot the preferable straightness, but a breadth of view upon same is obtained from within, and the yard space is materially widened.

A discussion followed in which Messrs. E. Guy Dawber, Sydney Vacher, H. D. Searles-Wood, Arthur Keen, Francis Hooper, T. C. Yates, W. Henry White, Maurice B. Adams and Arnold Mitchell took part.

Enquiries Answered.

The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Clerk of Works in Admiralty.

NORTHAMPTON.—H. R. T. writes: "Where can I obtain information regarding a position as clerk of works under the Admiralty?"

I do not know of any such appointment; I am under the impression that the work is done by temporary assistant civil engineers. The War Department have clerks of works both permanent and temporary; the posts are not obtainable in open competition, but any man considering himself specially fitted may make application to the nearest official centre stating his qualifications fully, when, if there should be a vacancy, he may get an opportunity of being taken on temporarily and afterwards of being nominated for the qualifying examinations for permanent work.

HENRY ADAMS.

Putting in a New Shop Front.

LONDON, S.E.—YOUNG BUILDER writes: "I am about to open a shop the front of which is no good for my purpose; therefore I must have another put in. The question is, should I have to buy the glass or would the cost of this be covered by insurance? Kindly name someone who undertakes such business."

Your question is not very clearly put. The insurance of plate-glass windows only secures their replacement should they get broken by accident, but you do not appear to have had any such accident. There are many good firms from whom plate glass may be purchased. Both the following have

advertisements in the current number of "Specification":—W. J. Pearce, Ltd., 10, Newman Street, Oxford St., W.; Pilkington Brothers, Ltd., 10, Upper Thames Street, E.C. F. S. I.

Cost of Party-Walls.

GLASGOW.—LANGSIDE writes: "Can you make clear to us the position of any person building on ground already bounded on two sides by the walls of other persons, which now become mutual property? The point is, are the rates or prices for such walls when charged to the new proprietor to be rates current at the present time, or the rates current when the walls were built—in this case twenty years ago? If the old rates, can the original builders charge interest on money spent from then till now; and if the present-day rates, can the new proprietor deduct anything for depreciation?"

In default of any agreement previously made to the contrary, the cost of party-walls should be calculated at their present value, and therefore no question of either interest or depreciation enters into the matter. The payment should be simply the fair price of the brickwork whenever the adjoining owner makes use of the wall (see Surveyors' Institution Transactions, vol. xxiv., p. 117). F. S. I.

Building Line.

YORKSHIRE.—A. C. writes: "I have deposited plans of shops and dwellings with the Urban District Council and have been informed that the Council has no by-laws of any kind. Neither my clients nor the owners of the land have had any notice served on them of any intended improvement line. The plans show the front wall of the shops on the present old mill wall, still keeping the existing building line. The shop cornice is 1ft. high from back edge of causeway (which is public), and this is the lowest projection from the face of the building. Can the Council by any Act of Parliament or police by-law enforce the building to be set back, so that no cornice or any other projection shall overhang the footpath, as they disapprove the plans on these grounds?"

As the Urban District Council have no by-laws, there was no necessity for you to deposit plans, as they apparently possess no power either to approve or reject them. You are quite justified in adhering to the old building line, but you should not make any projection in any portion of your new building in such a way as to be in advance of that line. The Public Health Act, 1875, provides:—Section 155: "An urban authority may prescribe the line in which any house or building, or the front thereof, . . . shall be erected . . . The urban authority shall pay or tender compensation . . . for any loss or damage . . . the amount . . . in case of dispute to be settled by arbitration in manner provided by this Act." Section 155: "It shall not be lawful in any urban district, without the written consent of the urban authority, to bring forward any . . . building . . . beyond the front wall of the . . . building on either side thereof, nor to build any addition thereto beyond the front of the . . . building on either side of the same." F. S. I.

Sectional Area of Girder Flanges.

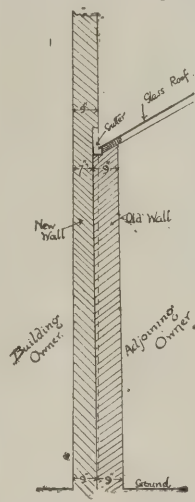
BATH.—P. S. B. writes: "An iron girder is loaded at two points, each 6ft. 8in. apart. The span is 20ft. Each load is $4\frac{1}{2}$ tons. The scantling of the girder is required." (Querist here goes into figures which we have not the space to give.)

The method shown is only an approximate one and based upon a safe stress of 4 tons per sq. in. in flanges. It does not apply to wooden beams, and for steel the constant 6 might be taken. It would be much better

to work by some more accurate method, taking the span as centre to centre of bearings, depth as centre to centre of flanges, and stress suited to the quality of the material. A flange 14in. by $\frac{3}{4}$ in. is not suitable for a rolled joist. The whole subject should be thoroughly studied from some text-book, such as "The Practical Designing of Structural Ironwork" (Spon, 8s. 6d.) and the subsequent parts of "Designing Ironwork, 2nd Series," where steel is the chief material dealt with. HENRY ADAMS.

Overhanging Wall.

BUILDING OWNER writes: "I build a gin. wall against my neighbour's gin. wall, the latter overhanging my property 2in. My neighbour claims compensation for obstruction to gutter—which is only 3in. wide (to take water off lean-to glass roof)—on account of my wall corbelling out over same. Does not the overhanging of my neighbour's wall constitute a trespass on my land, the wall having been built four years only?"



Four years is an insufficient period in which to acquire a prescriptive right to the 2in. overhang referred to, and therefore the portion of your neighbour's wall and gutter which so overlaps your property forms a subject of trespass and may be summarily removed by you. But I would advise that great discretion be exercised in such a matter, as you may find it difficult to exactly establish your boundary line within so small a space as 2in. Do not your neighbour's footings project also? If they do not, presumably you are justified in accepting that fact as an acknowledgment on his part that the face of the wall at ground level is the true boundary. F. S. I.

Working out Stresses.

BASINGSTOKE.—F. B. writes: "Kindly recommend a good book that explains method for working out safe loads for beams, girders, &c."

"Practical Designing of Structural Ironwork," by Prof. Henry Adams (price 8s. 6d.), and "Stresses and Thrusts," by G. A. T. Middleton (price 5s.). There was a printer's error in the enquiry you refer to. It should have read 8r instead of r8.

Damp in House.

NEWCASTLE.—A. & W. write: "About two and a half years ago we built a large house in a fairly exposed position in Northumberland, though not near the sea. The walls throughout were 18in. random rubble, covered with $\frac{3}{4}$ in. rough-cast and gravel. The rough-cast was in the proportion of 2 parts Portland cement to 1 of clean sharp river sand; it is the finest we have ever seen, and the gravel can only be removed with hammer and chisel. The walls internally were plastered and covered temporarily with cleap lining paper. Almost every wall in the house, both internal and external, is still sweating abundantly, so that it is utterly impossible to hang good papers anywhere. The woodwork has suffered from the damp, and our clients and ourselves are quite at a loss as to the reason. The house was entered far too soon, but has been constantly ventilated, with windows wide open, for more than two years. What is the cause of the trouble, and can you suggest a remedy?"

It is impossible to assign the cause of the trouble precisely without more exact knowledge of the facts and an examination of the building in question, but we offer the following suggestions which may enable you to settle the question:—Firstly, an 18in. random rubble wall is generally no better than a gin. brick wall; random rubble has a much larger amount of mortar than brickwork, and this of course is absorptive and retentive of moisture. In an exposed situation a gin. or indeed a solid 14in. brick wall will not keep damp out, and the only satisfactory method is to have a cavity in the wall either by a $4\frac{1}{2}$ outer skin, vertical tiling or slating, or one built with "Tenax" or "Hygeian" rock compositions. The mere covering of the walls with a $\frac{3}{4}$ in. skin of rough-cast, even though nearly pure cement, was not an efficient protection—it would, of course, efficiently resist a downpour of short duration, but long continued rains would easily penetrate. Of course, if the mortar was very good and the work well done this criticism may not apply fully, and indeed the fact that internal walls are damp points to other causes. It is not stated whether the site was concreted over under the house or a bitumen damp-course employed, or the site drained, as it should be. Then again the stone may have been freshly quarried and not seasoned, so containing quarry sap which takes some time to dry out. The lining papers undoubtedly served to keep moisture in the walls. To remedy the matter we suggest that the following points should be attended to:—The ground beneath floors should be concreted over and a base of trowelled Portland cement, about 1ft. 6in. high and going down to the footings, placed round the walls outside. The floors should be well ventilated. The walls should be rendered weatherproof by vertical tiling or slating, or by coating with pitch and tar. The papers should be removed internally and the walls dried out thoroughly by the use of coke fires, the fumes of which will harden the lime-mortar.

Obituary.

Dr. J. O. Mitchell, a noted Glasgow archaeologist, died recently. His "Old Country Houses of the Glasgow Gentry" and "One Hundred Glasgow Men" now command big prices in the sale-room.

Alderman Calvert, deputy mayor of Huddersfield, died last Thursday at the age of fifty-nine. He was a well-known joiner and builder.

Bakehouses and Kitchens: Proposed Standard Requirements.

—Dr. William Collingridge, medical officer of health to the Corporation of London, has issued a report in which he suggests that all owners of kitchens and above-ground bakehouses be informed that a standard of requirements has been drawn up by the Corporation and that upon complying with this a certificate will be granted. The proposed standard requirements are set out at the end of the report. They stipulate smooth impervious floors, walls and ceilings, double covers to inspection chambers, minimum height of rooms 8ft., minimum cubic capacity 1,500ft. and not less than 400 cub. ft. per employee, temperature not to exceed 80 degs. Fahr., each bakehouse oven furnace to have a flue for carrying off sulphurous fumes and an outlet for heat and steam immediately above the oven door; underground kitchens to have inlets for ventilation at least 12in. above the footway or ground level, proper lavatory and w.c. accommodation, storage water cisterns with dust-tight fixed covers, shelves to be 2in. from the walls and hose to be provided for washing the room efficiently.

Complete List of Contracts Open.

DATE OF DELIVERY.		WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
BUILDING:				
Feb.	11	Bradford—Eleven Houses	Corporation	W. Rycroft, Architect, Bank Buildings, Manchester Rd., Bradford
"	11	Bridlington—Kiosks, &c.	Spencer & Son	E. R. Matthews, Borough Surveyor, Town Hall, Bridlington.
"	11	Bridlington—House, &c.	Co-operative Society, Ltd.	A. T. Martindale, 66 Wellington Road, Bridlington.
"	11	Drighlington, Yorks—Store	Morley Industrial Co-operative Society, Limited.	Society's Office, Drighlington.
"	11	East Ardsley, Yorks—Fittings		R. Castle & Son, Architects, L.C. and Midland Bank Buildings, Cleckheaton.
"	11	Farnley Tyas, near Huddersfield—Church Restoration		J. Kirk & Sons, Architects, Huddersfield.
"	11	Worthing, Sussex—Store	Baptist Church Committee	Borough Surveyor, Municipal Offices, Worthing, Sussex.
"	11	Bellast—Church	Corporation	J. A. Hanna, 102 Donegal Street, Belfast.
"	11	Glasgow—Extension of Generating Station	Lewisham Borough Council	W. A. Chamen, 75 Waterloo Street, Glasgow.
"	11	London, S.E.—Cement and Lime	Borough Council	Surveyor, Town Hall, Catford.
"	11	West Ham—Slates, Lime, Cement, &c.		Borough Engineer, Town Hall, Stratford, E.
"	11	Merthyr Tydfil—Schools		E. Stephens, Clerk, Town Hall, Merthyr Tydfil.
"	12	St. Leonards, Sussex—Coastguard Station		Director of Works Dept., Admiralty, 21 Northumberland Av., W.C.
"	12	Tirphill—Thirty-three Houses	Graig-Rhymney Club	T. Roderick, Architect, Giebeland, Merthyr Tydfil.
"	12	Netley, Hants—Houses	Urban District Council	Superintending Engineer, H.M. Dockyard, Portsmouth.
"	12	Stockingford, Nuneaton—Schools	H. B. & J. E. Banks	H. Quick, 64 Hertford Street, Coventry.
"	12	Morley—Warehouse		S. B. Birds & T. A. Buttery, 1 Basinghall Square, Leeds.
"	12	Merthyr, Wales—Two Shops		C. M. Davies, Architect, Merthyr.
"	12	Tipperary—Alterations to Old Buildings		W. H. Hill & Son, 28 South Mall, Cork.
"	12	Wolverhampton—Lime	Sewerage Committee	W. Clifford, Manager, Sewage Outfall Works, Wolverhampton.
"	12	Netley—Coastguard Houses, &c.	Admiralty	Superintending Engineer, H.M. Dockyard, Portsmouth.
"	13	Richmond, Surrey—Cement, &c.	Town Council	J. H. Brierley, Borough Surveyor, Town Hall, Richmond, Surrey.
"	13	Coventry—Concrete and Brick Foundations	Corporation	F. V. Stevenson, Engineer, Gasworks, Coventry.
"	15	Whitley Bay, Northumberland—Conveniences	Urban District Council	J. P. Spencer, 30 Howard Street, North Shields.
"	15	Northwich—Building Materials	Weaver Trustees	J. A. Sauer, Engineer, Weaver Navigation, Northwich.
"	15	London, E.C.—Lime and Cement	Finsbury Borough Council	Borough Surveyor, Town Hall, Rosebery Avenue, E.C.
"	15	Brighton—Dwellings, &c.		F. J. Tillsone, Town Clerk, Town Hall, Brighton.
"	15	Canterbury—Extension to Engine-house	Drainage Committee	A. C. Furley, City Surveyor, Guildhall Street, Canterbury.
"	15	Great Yarmouth—Extension to Library	Free Library Committee	J. W. Cockrill, Borough Surveyor, Town Hall, Great Yarmouth.
"	15	Birkenhead—Cement, &c.	Corporation	W. Bates, Engineer, Craven Street Generating Station, Birkenhead.
"	16	Loughlinstown, Ireland—Thirty-eight Cottages	Rathdown No. 1 R.D.C.	R. M. Butler, Dawson Chambers, Dawson Street, Dublin.
"	16	Truro—Repairs at Workhouse	Guardians	F. Truscott, Union Office, Truro.
"	16	London, S.E.—Bricks and Cement	Bermondsey Borough Council	F. Ryall, Town Clerk, Town Hall, Spa Road, S.E.
"	16	Naas—Town Hall, &c.	Urban District Council	M. Gogarty, Clerk, Town Hall, Naas.
"	16	Nelson, Lancs—Lime	Gas Committee	A. J. Hope, Engineer, Gasworks, Nelson.
"	16	Edmonton—Workshop	School Board	J. Moule, School Board Offices, Brettenham Road, Upper Edmonton.
"	17	Manchester—Fire Station	Watch Committee	W. Windsor, 37 Brown Street, Manchester.
"	17	London, W.—Cement	Chiswick U.D.C.	J. Barclay, Surveyor, Town Hall, Chiswick.
"	17	Leeds—Wooden Shelter		City Engineer, Leeds.
"	17	Folkestone—Public Baths	Urban District Council	J. Barclay, Surveyor, Town Hall, Chiswick.
"	17	Folkestone—Cement	Corporation	A. E. Nichols, Borough Surveyor, Corporation Offices, Folkestone.
"	17	London, S.W.—Shelters	Fulham Borough Council	F. Wood, Borough Engineer, Town Hall, Fulham, S.W.
"	17	Millom, Cumberland—Retorts	Urban District Council	W. T. Lawrence, Clerk, Council Offices, Millom, Cumberland.
"	17	Middlesbrough—Twelve Houses	Dr. F. Munro	Moore & Archibald, 27 Albert Road, Middlesbrough.
"	18	Killarney—Boiler-House, &c.		J. F. Fuller, 179 Great Brunswick Street, Dublin.
"	18	Lancaster—Extensions at the Sanatorium	Sanitary Committee	Borough Surveyor, Market Square, Lancaster.
"	18	Somerton—Rebuilding	Crewkerne United Breweries Co., Ltd.	W. T. Isaacs, Secretary, Crewkerne.
"	19	Barnstaple—Cleaning and Decorating Church		Vicarage, Landkey, Barnstaple.
"	19	Sheffield—Cement and Lime	Highways Sewerage Committee	C. F. Wike, City Surveyor, Town Hall, Sheffield.
"	20	Keighley—School	School Board	A. P. Harrison, 18 Cooke Lane, Keighley.
"	20	Northampton—Cement, Lime, Bricks, &c.	Corporation	A. Fidler, Borough Engineer, Guildhall, Northampton.
"	20	Plymouth—Cement	Corporation	J. Paton, Borough Surveyor, Municipal Offices, Plymouth.
"	20	Reading—Hospital	County Council	C. Smith & Son, 164 Friar Street, Reading.
"	20	Bangor, Wales—Workmen's Houses	City Council	J. Gill, City Surveyor, Town Hall, Bangor, Wales.
"	22	London, N.—Cement	Hornsey U.D.C.	E. J. Lovegrove, Municipal Offices, Southwood Lane, Highgate, N.
"	22	Tonypandy, Wales—Fifty-eight Houses	Building Club Committee	Lewis & Morgan, 55 Dunraven Street, Tonypandy, Wales.
"	22	Runcorn—Hospital	Rural District Council	G. E. Bolshaw, 189 Lord Street, Southport.
"	22	Beckenham—Bricks, Cement, &c.	Urban District Council	F. Stevens, Clerk, Council Offices, Beckenham.
"	22	London, N.W.—Lime, Cement, Bricks	St. Pancras Borough Council	W. N. Blair, Borough Surveyor, Town Hall, St. Pancras.
"	23	Tredegar—Cottage Homes	Guardians	W. B. Rees, 37 St. Mary Street, Cardiff.
"	23	Epsom—Additions, &c., to Workhouse	Guardians	H. D. S. Wood, 157 Wool Exchange, Coleman Street, E.C.
"	23	Southall, Middlesex—Lime and Cement	Urban District Council	R. Brown, Engineer, Public Offices, Southall.
"	23	Walthamstow—Tramway Car Sheds	Urban District Council	G. W. Holmes, Engineer, Town Hall, Walthamstow.
"	23	Manchester—Station Extensions	Lancs and Yorks Railway Co.	Engineer, Hunt's Bank, Manchester.
"	24	Knutsford—Library	Urban District Council	Darbyshire & Smith, 17 Brazennose Street, Manchester.
"	25	Rainhill, Lancs—Two Asylum Wards	Asylums Board	J. Gornal, Clerk, Clerk's Office, Asylums Board, Lancashire.
"	25	Stradbroke, Suffolk—Police Station	East Suffolk County Council	H. Miller, 16 Museum Street, Ipswich.
"	25	Woolwich—Cement	Borough Council	F. Sumner, Borough Engineer, Maxey Road, Plumstead.
"	26	Talgarth—Two Cottages	Brecon Asylum Committee	J. H. Evans, Clerk, Visiting Committee, Talgarth.
"	26	Talgarth—Farm Buildings	Brecon Asylum Committee	J. H. Evans, Clerk, Visiting Committee, Talgarth.
"	27	London, W.—Boiler-house, &c.	London County Council	R. N. Partridge, 6 Waterloo Place, London, S.W.
"	27	Narborough, near Leicester—Asylum		Everard & Pick, Architects, Millstone Lane, Leicester.
March	4	Hutton, Essex—Homes and Schools, &c.	Guardians	Holman & Goodeham, 6 King's Bench Walk, Temple, E.C.
No date		Crowle, Lincs—Chapel	Wesleyan Trustees	T. B. Thompson, 15 Parliament Street, Hull.
"		Hull—Church Schools	Baptist Church Trustees	T. B. Thompson, 15 Parliament Street, Hull.
"		Finchley—Six Houses		R. J. Tasker, 38 John Street, Edford Row, W.C.
ENGINEERING:				
Feb.	11	West Ham—Electrical Stores	Borough Council	Boro' Engr., Centr. Electricity Station, Abbey Mills, West Ham.
"	11	Bootle, Lancs—Electric Light Installation	Education Committee	Borough Electrical Engineer, Pine Grove, Bootle, Lancs.
"	11	Strathspey, Scotland—Water Supply Works		C. C. Doig, Engineer, Elgin.
"	15	Kirkcaldy, Scotland—Wiring	Corporation	O. F. Francis, Electricity Works, Victoria Road, Kirkcaldy.
"	15	London, S.W.—Electric Plant	Battersea Borough Council	H. R. F. Mackay, Electricity Dept., Lombard Rd., Battersea, S.W.
"	15	Swindon—Electric Wiring	Corporation	J. G. Griffin, Electrical Engineer, Electricity Works, Swindon.
"	15	Dublin—Engineering Work	Gt. Northern Rly. Co. (Ireland)	W. H. Mills, Engineer-in-Chief, Adams Street Terminus, Dublin.
"	15	Hindley, Lancs—Sulphate of Ammonia Plant	Urban District Council	H. O. Timmins, Gas Engineer, Hindley, Lancs.
"	15	Bristol—Swingbridge	Docks Committee	W. W. Squire, Engr., Engineer's Office, Cumberland Rd., Bristol.
"	15	Bristol—Caisson	Docks Committee	W. W. Squire, Engr., Engineer's Office, Cumberland Rd., Bristol.
"	15	Bristol—Lock Gates	Docks Committee	W. W. Squire, Engr., Engineer's Office, Cumberland Rd., Bristol.
"	15	Blue Anchor, near Watchet, Somerset—Extension of Sea Defence Works	County Council	Sir J. W. Barry & Partners, 21 Delahay Street, Westminster, S.W.
"	15	Manchester—Hydraulic Goods Lift	Markets Committee	City Surveyor, Town Hall, Manchester.
"	15	Sheffield—Heating Apparatus	Education Committee	W. J. Hale, 13 St. James's Row, Sheffield.
"	16	London, S.W.—Fuel Economizers	London County Council	County Hall, Spring Gardens, S.W.
"	17	London, N.—Free Wiring, &c.	Islington Borough Council	Electrical Engineer, 50 Eden Grove, Holloway, N.
"	18	London, S.E.—Fire Mains	Guardians	Newman & Newman, 31 Tooley Street, S.E.
"	18	Manchester—Asphalt Work	Dock and Warehouse Extension Co., Ltd.	W. Hunter, 41 Spring Gardens, Manchester.
"	19	Londonderry—Sinking Well	District Lunatic Asylum	M. A. Robinson, Richmond Street, Londonderry.
"	20	Newburgh, Scotland—Filters	Town Council	W. D. Sang & Lockhart, Kirkcaldy.
"	20	Chelmsford—Engine, &c.		Borough Surveyor, 16 London Road, Chelmsford.
"	22	Runcorn—Waterworks	Rural District Council	G. F. Ashton, 71 High Street, Runcorn.
"	22	Edinburgh—Engine and Dynamo	Lord Provost	Resident Electrical Engineer, Dewar Place Station, Edinburgh.
"	22	Hanley—Electric Lighting Plant	Corporation	C. A. Cowell, Corporation Electrical Engineer, Electricity Works, Park Road, Hanley.
"	24	London, N.—Conduits and Mains	Islington Borough Council	Borough Electrical Engineer, 50 Eden Grove, Holloway, N.
"	25	London, N.—Electrical Stores	Islington Borough Council	W. F. Dewey, Town Clerk, Town Hall, Upper Street, N.
"	26	Sunderland—Crane, &c.	Corporation	J. F. C. Snell, Borough Electrical Engineer, Town Hall, Sunderland.
"	27	Hitchin—Hot-Water Supply, &c.	Three Counties Asylum	R. E. Middleton, 17 Victoria Street, S.W.
Mar.	1	Manchester—Electric Hoists and Cranes	Dock and Warehouse Extension Co., Ltd.	W. H. Hunter, 41 Spring Gardens, Manchester.
"	7	Birmingham—Electric Power Station	Corporation	J. D. Watson, Engineer, Tyburn, near Birmingham.
"	8	Brigg, Lincs—Lock Gates	Ancholme Drainage and Navigation Commissioners	A. Atkinson, Commissioners' Engineer, Brigg, Lincs.

Complete List of Contracts Open continued.

DATE OF DELIVERY.		WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED
FURNITURE:				
Feb.	12	London, S.W.—Furniture	London County Council	G. I. Gomme, Clerk, County Hall, Spring Gardens, S.W.
"	15	West Ham—Furniture	Borough Council	W. Jacques, 2 Fen Court, Fenchurch Street, E.C.
IRON AND STEEL:				
Feb.	11	West Ham—Ironmongery, &c.	Borough Council	Borough Engineer, Town Hall, Stratford, E.
"	11	London, S.E.—Ironwork	Lewisham Borough Council	Surveyor, Town Hall, Catford
"	12	London, E.C.—Buoy Sinks	Corporation of Trinity House	Secretary, Trinity House, London, E.C.
"	12	Leeds—Fencing	City Engineer, Leeds	City Engineer, Leeds
"	12	Belfast—Railway Stores	County Down Railway Co.	T. J. Britain, Secretary, Queen's Quay Terminus, Belfast.
"	13	Bridgend—Tools, &c.	Glamorgan County Council	T. L. Edwards, County Surveyor, Town Hall, Bridgend.
"	13	Warrington—Pipes, &c.	Water Committee	Water Engineer, Municipal Offices, Sankey Street, Warrington.
"	13	Hindley, Lancs.—Gas Main	Urban District Council	H. O. Timmins, Gas Engineer, Hindley, Lancs.
"	15	London, E.C.—Steel Buoys	Corporation of Trinity House	Secretary, Trinity House, E.C.
"	15	Birkenhead—Iron and Steel	Corporation	W. Bates, Borough Electrical Engineer, Craven Street Generating Station, Birkenhead.
"	15	Northwich—Ironmongery	Weaver Trustees	J. A. Sauer, Engineer, Weaver Navigation, Northwich
"	15	Sheffield—Heating Apparatus	Education Committee	W. J. Hall, 13 St. James's Row, Sheffield.
"	16	Nelson, Lancs.—Ironmongery	Gas Committee	A. J. Hope, Engineer, Gasworks, Nelson.
"	16	London, S.E.—Ironmongery	Bermondsey Borough Council	F. Ryall, Town Clerk, Town Hall, Spa Road, S.E.
"	17	London, W.—Ironmongery, &c.	Chiswick U.D.C.	J. Barclay, Surveyor, Town Hall, Chiswick.
"	17	Folkestone—Iron and Ironmongery	Corporation	A. E. Nichols, Borough Surveyor, Corporation Offices, Folkestone.
"	17	Chiswick—Ventilating Shafts	Urban District Council	J. Barolay, Surveyor, Town Hall, Chiswick.
"	20	Harrogate—Pipes, &c.	Corporation	E. W. Dixon, 14 Albert Street, Harrogate.
"	20	Stettin—Chains	Der Hafenbauinspector, Swinemunde	Der Hafenbauinspector, Swinemunde.
"	20	Stettin—Iron and Steel	Der Hafenbauinspector, Swinemunde	Der Hafenbauinspector, Swinemunde.
"	20	Northampton—Ironmongery	Corporation	A. Fidler, Borough Engineer, Northampton.
"	20	Plymouth—Iron, Steel, Bolts and Nuts, &c.	Corporation	J. Paton, Borough Surveyor, Municipal Offices, Plymouth.
"	22	London, N.—Iron and Steel	Hornsey U.D.C.	E. J. Lovegrove, Borough Engineer, Municipal Offices, Southwood Lane, Highgate, N.
"	22	London, N.W.—Ironmongery	St. Pancras Borough Council	W. N. Blair, Borough Engineer, Town Hall, St. Pancras, N.W.
"	25	London, N.—Iron and Steel	Islington Borough Council	W. F. Dewey, Town Clerk, Town Hall, Upper Street, N.
"	29	Edinburgh—Roofs, &c.	Gas Commissioners	W. R. Herring, Chief Engineer, New Street Works, Edinburgh.
PAINTING AND PLUMBING:				
Feb.	11	London, S.E.—Paints, &c.	Lewisham Borough Council	Surveyor, Town Hall, Catford.
"	11	West Ham—Oils, Colours, Brushes, &c.	Borough Council	Borough Engineer, Town Hall, Stratford, E.
"	13	Warrington—Oils and Paints	Water Committee	Water Engineer, Municipal Offices, Sankey Street, Warrington.
"	15	Northwich—Paints, Varnishes, &c.	Weaver Trustees	J. A. Sauer, Engineer, Weaver Navigation, Northwich.
"	15	Birkenhead—Paints and Oils	Corporation	W. Bates, Borough Electrical Engineer, Craven Street Generating Station, Birkenhead.
"	16	London, S.E.—Paints and Oils	Bermondsey Borough Council	F. Ryall, Town Clerk, Town Hall, Spa Road, S.E.
"	17	Folkestone—Paint, Varnish, Glass, &c.	Corporation	A. E. Nichols, Borough Surveyor, Corporation Offices, Folkestone.
"	20	Plymouth—Paint, Glass, &c.	Corporation	J. Paton, Borough Surveyor, Municipal Offices, Plymouth.
"	20	Northampton—Oils, Colours, &c.	Corporation	A. Fidler, Borough Engineer, Northampton.
"	22	London, N.W.—Paints and Oils	St. Pancras Borough Council	W. N. Blair, Borough Engineer, Town Hall, St. Pancras, N.W.
"	23	Southall, Middlesex—Oils	Urban District Council	R. Brown, Surveyor, Public Offices, Southall, Middlesex.
"	25	Mickleover, Derby—Painting	County Asylum Committee	Mr. McWilliams, Engineer, County Asylum, Derby.
No date		Bethnal Green—Plumbing Work		Clerk of Works, Artizans' Dwellings, Barnsley St., Bethnal Green.
ROADS AND CARTAGE:				
Feb.	11	West Ham—Paving Materials	Borough Council	Borough Engineer, Central Elec. Sta., Abbey Mills, West Ham, E.
"	11	London, S.E.—Road Materials	Lewisham Borough Council	Surveyor, Town Hall, Catford.
"	11	Workshop—Slag	Urban District Council	G. H. Featherston, Clerk, Town Hall, Worksop.
"	11	Kingston-upon-Thames—Road Works	Corporation	H. A. Winsor, Town Clerk, Clatten House, Kingston-upon-Thames.
"	11	London, N.E.—Cartage	Hackney Borough Council	N. Scorgie, Borough Surveyor, Town Hall, Hackney, N.E.
"	12	Wisbech—Materials	Rural District Council	G. Carrick, 13 South Brink, Wisbech.
"	13	Richmond, Surrey—Road Materials	Town Council	J. H. Brierley, Borough Surveyor, Town Hall, Richmond.
"	13	Bedford—Materials, &c.	County Council	County Surveyor, Shirehall, Bedford.
"	13	Blackburn—Materials, &c.	Corporation	W. Stubbs, Borough Engineer, Municipal Offices, Blackburn.
"	13	Bridgend—Glamorgan—Material and Haulage	County Council	T. L. Edwards, County Surveyor, Town Hall, Bridgend.
"	13	Droylsden—Street Works	Urban District Council	C. Hall, 10 Ashton Road, Droylsden.
"	15	London, E.C.—Paving Materials	Finchbury Borough Council	Borough Surveyor, Town Hall, Rosebury Avenue, E.C.
"	15	Essex—Broken Granite	County Council	P. J. Sheldon, Chief Surveyor, Chelmsford.
"	15	Eastbourne—Road Improvements	Corporation	D. J. Bowe, Borough Surveyor, Town Hall, Eastbourne.
"	16	London, E.C.—Paving	Shoreditch Borough Council	J. R. Dixon, Borough Surveyor, Town Hall, Old Street, E.C.
"	16	London, N.—Roads and Sewers	County Council	Housing of Working Classes Section, Architect's Department, 19 Charing Cross Road, W.C.
"	16	Long Sutton, Lincs—Granite, &c.	Urban District Council	S. S. Mossop, Clerk, Long Sutton, Lincolnshire.
"	16	London, S.E.—Granite	Bermondsey Borough Council	F. Ryall, Town Clerk, Town Hall, Spa Road, S.E.
"	16	Middlesbrough—Whinstone	Rural District Council	W. H. Dixon, District Surveyor, Kirkby-in-Cleveland, nr. Stokesley.
"	17	Meriden, Coventry—Cartage	Rural District Council	A. Seymour, 11 Priory Street, Coventry.
"	17	Salisbury—Stones and Gravel	Rural District Council	D. W. Morris, District Surveyor, Homington.
"	17	Folkestone—Granite Kerb and Channel	Corporation	A. E. Nichols, Borough Surveyor, Corporation Offices, Folkestone.
"	17	London, W.—Materials	Chiswick U.D.C.	J. Barclay, Surveyor, Town Hall, Chiswick.
"	18	East Retford—Granite	Corporation	J. D. Kennedy, Borough Surveyor, East Retford.
"	18	Southend-on-Sea—Making-up	Corporation	E. J. Elford, Borough Surveyor, Southend-on-Sea.
"	18	Stokesley—Whinstone	Rural District Council	W. H. Dixon, District Surveyor, Kirkby-in-Cleveland, nr. Stokesley.
"	19	Sheffield—Granite	Highway & Sewerage Committee	C. F. Wike, City Surveyor, Town Hall, Sheffield.
"	19	Horncastle, Lincs—Granite and Slag	Rural District Council	J. E. Chatterton, Clerk, Union Offices, Horncastle.

(Continued on page xviii.)

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THE TRUSTEES of the Boulevard Baptist Church, Hull invite TENDERS for the ERECTION of SCHOOL BUILDINGS, &c., adjoining the Church.

Plans and Specifications may be seen, and Bills of Quantities obtained at my Offices on and after the 5th prox.

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The lowest or any Tender not necessarily accepted.

T. BROWNLOW THOMPSON, Architect.

28th Jan., 1904, 15, Parliament Street, Hull.

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INFECTIOUS DISEASES HOSPITAL.

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The plans, drawings, elevations, sections, and specification of the works for and incident to the erection of the Hospital may be inspected at the Offices of the Architects, Messrs. CHARLES SMITH & SON, of 164, Friar Street, Reading, where also copies of the general conditions and the bills of quantities and forms of Tender may be obtained after THURSDAY, FEBRUARY 4.

Every Tender must be submitted on the form obtained from the Architects as above stated.

Sealed Tenders, endorsed "Tender for the Erection of Infectious Diseases Hospital," must be delivered to me at this Office on or before SATURDAY, FEB. 20, 1904.

The contract for the execution of the works will contain a clause requiring the Contractor to pay to workmen employed by him in the carrying out of the works the local trade rate of wages and will also contain a clause requiring him to observe the recognised conditions of labour observed by the Reading Master Builders' Association.

The Council do not bind themselves to accept the lowest or any Tender.

By Order, W. S. CLUTTERBUCK,

Town Clerk's Office, Town Hall, Reading, January 27, 1904.

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BRICKWORK, Pointing, Plastering, Slating, Tiling, Villas, bungalows, cottages, piece or taken throughout, including drains, floors, grates, yards, &c. Labour only. Anywhere. First-class references.—LANCASTER, 62, Magdalen Street, Thetford, Norfolk.

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BOOK WANTED. Banister Fletcher's History of Architecture; 4th edition.—Write, stating offer, to G. MORLAND, Rastrick, Croydon.

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EMPLOYMENT REGISTER.

Too late for Classification.

- 191.—ARCHITECT'S ASSISTANT, 15 yrs. ex., A.R.I.B.A., unmarried, desires post in seaport or bracing town.
- 192.—JUNIOR DRAUGHTSMAN, age 21, 3 yrs. ex. road surveying, ex. refs., mod. s.
- 193.—BUILDER'S MANAGER, 6 yrs. present sit., would superintend repairs on estate.
- 194.—DESIGNER, knowledge of composition, Carton Pierre, fibrous plaster, and woodwork, wants permanency.
- 195.—ARCHITECT'S JUNIOR ASSISTANT, wkg. drawings, details, tracings, &c., wants engagement in London.
- 197.—QUANTITIES, competent assistance given, specifications, mod. terms.
- 198.—DRAUGHTSMAN, can assist Architect's Surveyor or Builder, wkg. drawings, details, &c., &c., quantities and specifications, mod. terms.
- 199.—ASSISTANCE given in spare time, 7 yrs. ex., neat draughtsman, tracings.
- 200.—QUANTITY SURVEYOR, considerable experience, disputed accounts adjusted.

TWO LETTERS.

The First.

"Allow me to thank you for the generous means you have adopted in bringing the wants of employee and employer as it were face to face."—R. R., Camberwell.

The Second.

"Having obtained an appointment through your Want Columns, I should be glad if you will remove my advertisement from the 'Register.'"—H. C. H. M., Malvern.

All who are out of employment should not fail to take advantage of the facilities offered by the Register.

The conditions are very simple and are to be found on page xix above the Employment Register.

Property & Land Sales.

The charge for Advertisements under this heading is 2s. per insertion not exceeding four lines, and 6d. per line after.

Silverhill Estate, Hastings.—Fourth Sale. **WEATHERALL and GREEN** will SELL by AUCTION, at the CASTLE HOTEL, Hastings, on THURSDAY, Feb. 25, at six o'clock precisely, 35 plots of FREEHOLD BUILDING LAND in Burry Road, ripe for the erection of small villa and terrace residences. Free conveyances.—Messrs. Phillips and Cheesman, Solicitors, 23, Havelock Road, Hastings. Particulars of the Auctioneers, 22, Chancery Lane, London.

To Builders, Speculators, and others. **FINCHLEY**, within 12 minutes' walk of Finchley (Church End) Station, on the G.N. Ry., with good service of trains to the City and West End, and six miles from Regent's Park.

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HAMPTON and SONS will SELL the above by AUCTION, at the Mart, Tokenhouse Yard, E.C., on THURSDAY, MARCH 10th, 1904, at 2 o'clock precisely (unless previously disposed of by private treaty), in lots. Particulars, view, plan, and conditions of sale may be obtained of Messrs. MOBERLEY and WHARTON, Solicitors, 172, High Street, Southampton; Messrs. PATERSON, CANDLER and SYKES, Solicitors, 8, Bream's Buildings, Chancery Lane, E.C.; and of HAMPTON and SONS, Auctioneers, 1, Cockspur Street, S.W.

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OFFICE: 6, GREAT NEW STREET, FETTER LANE. E.C.

Complete List of Contracts Open—continued.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
ROADS AND CARTAGE—cont.			
Feb. 20	Northampton—Granite, Kerb, Setts, &c.	Corporation ..	A. Fidler, Borough Engineer, Northampton.
" 20	Lewes—Materials, &c.	East Sussex County Council ..	F. J. Wood, County Surveyor, County Hall, Lewes.
" 20	Culham, Abingdon—Granite ..	Rural District Council ..	B. Challenor, 59 Sturt Street, Abingdon.
" 22	London, N.—Road Materials ..	Hornsey U.D.C. ..	E. J. Lovegrove, Municipal Offices, Southwood Lane, Highgate, N.
" 22	Beckenham—Granite, &c. ..	Urban District Council ..	F. Stevens, Clerk, Council's Offices, Beckenham.
" 22	London, N.W.—Granite ..	St. Pancras Borough Council ..	W. N. Blair, Borough Surveyor, Town Hall, St. Pancras, N.W.
" 22	Widnes—Improvement Works ..	Corporation ..	F. Stevens, Clerk, Council's Offices, Beckenham.
" 22	Wrexham, Denbighshire—Road Materials, &c.	County Council ..	W. N. Blair, Borough Surveyor, Town Hall, St. Pancras, N.W.
" 23	Southall, Middlesex—Gravel and Hoggins ..	Urban District Council ..	E. W. Jones, District Surveyor, Wrexham.
" 25	Woolwich—Road Material ..	Borough Council ..	R. Brown, Surveyor, Public Offices, Southall, Middlesex.
" 25	Ramsgate—Making-up ..	Corporation ..	F. Sumner, Borough Engineer, Maxey Road, Plumstead.
" 25	London, N.—Granite ..	Islington Borough Council ..	T. G. Taylor, Borough Surveyor, Albion House, Ramsgate.
SANITARY:			
Feb. 11	West Ham—Stoneware Pipes, Disinfectants, &c.	Borough Council ..	W. F. Dewey, Town Clerk, Town Hall, Upper Street, N.
" 11	London, S.E.—Sewerage Jobbing Works ..	Lewisham Borough Council ..	Borough Engineer, Town Hall, Stratford, E.
" 12	Kendal—Sewer ..	Corporation ..	Surveyor, Town Hall, Catford.
" 13	Berkhamsted—Sewer, &c. ..	Rural District Council ..	R. H. Clucas, Engineer, Kendal.
" 15	Basford, Nottingham—Sewerage and Sewage-disposal Works ..	Rural District Council ..	W. H. Thomas, Surveyor, Tring.
" 15	Canterbury—Sewer, &c. ..	Corporation ..	Sands, Walker & S. Maylan, Milton Chbrs, Milton St., Nottingham.
" 15	London, E.C.—Stoneware Goods ..	Finsbury Borough Council ..	A. C. Turley, City Engineer, Guildhall Street, Canterbury.
" 16	London, S.E.—Sewer Boots ..	Bermondsey Borough Council ..	Borough Surveyor, Town Hall, Rosebury Avenue, E.C.
" 16	Wellington, Somerset—Sewers ..	Urban District Council ..	W. N. Blair, Borough Surveyor, Town Hall, Spa Road, S.E.
" 17	London, W.—Disinfectants ..	Chiswick U.D.C. ..	C. J. Lomax, 37 Cross Street, Manchester.
" 17	Chiswick—36in. Drain ..	Urban District Council ..	J. Barclay, Surveyor, Town Hall, Chiswick.
" 18	Hemsworth, Yorks—Sewage Works ..	Rural District Council ..	J. Barclay, Surveyor, Town Hall, Chiswick.
" 19	Sheffield—Sewage Works ..	Highway & Sewerage Committee ..	T. H. Richardson, Engineer, Hemsworth.
" 20	Northampton—Stoneware Pipes, &c.	Corporation ..	C. F. Wike, City Surveyor, Town Hall, Sheffield.
" 20	Plymouth—Sanitary Fluid ..	Corporation ..	A. Fidler, Borough Engineer, Northampton.
" 22	London, N.—Sewer and Drainage Work ..	Corporation ..	J. Paton, Borough Surveyor, Municipal Offices, Plymouth.
" 22	Beckenham—Disinfectants ..	Hornsey U.D.C. ..	E. J. Lovegrove, Municipal Offices, Southwood Lane, Highgate, N.
" 22	London, N.W.—Stoneware Pipes ..	Urban District Council ..	F. Stevens, Clerk, Council's Offices, Beckenham.
" 23	Southall, Middlesex—Disinfectants ..	St. Pancras Borough Council ..	W. N. Blair, Borough Surveyor, Town Hall, St. Pancras, N.W.
" 23	Mortlake—Sewerage Works ..	Urban District Council ..	R. Brown, Surveyor, Public Offices, Southall, Middlesex.
" 23	St. Helens, Lancs—Sewer ..	Richmond Main Sewerage Board ..	W. Fairley, Engineer to Board, West Hall Road, Kew Gardens.
" 25	London, N.—Sewers and Drains ..	Health Committee ..	G. J. C. Broom, Borough Engineer, St. Helens, Lancs.
" 25	Woolwich—Disinfectants ..	Islington Borough Council ..	W. F. Dewey, Town Clerk, Town Hall, Upper Street, N.
Mar. 1	Wolverhampton—Stoneware Pipes ..	Borough Council ..	F. Sumner, Borough Engineer, Maxey Road, Plumstead.
" 2	Bromley, Kent—Sewer, &c. ..	Corporation ..	G. Green, Borough Engineer, Town Hall, Wolverhampton.
" 2	Headcorn, Kent—Sewers, &c. ..	Rural District Council ..	A. Williams & Sons, 14 Victoria Street, Westminster, S.W.
" 2	Headcorn, Kent—Sewers, &c. ..	Hollingbourne R.D.C. ..	Fairbank & Son, Engineers, Lendal Chambers, York.
TIMBER:			
Feb. 11	West Ham—Timber ..	Borough Council ..	Borough Engineer, Town Hall, Stratford, E.
" 11	London, S.E.—Timber ..	Lewisham Borough Council ..	Surveyor, Town Hall, Catford.
" 16	London, S.E.—Timber ..	Bermondsey Borough Council ..	F. Ryall, Town Clerk, Town Hall, Spa Road, S.E.
" 16	London, N.—Sleepers ..	Gt. Northern Rly. Co. ..	Engineer, King's Cross Station, London.
" 17	Folkestone—Timber ..	Corporation ..	A. E. Nichols, Borough Surveyor, Corporation Offices, Folkestone.
" 20	Northampton—Timber ..	Corporation ..	A. Fidler, Borough Engineer, Northampton.
" 20	Harrogate—Sleepers ..	Corporation ..	E. W. Dixon, 14 Albert Street, Harrogate.
" 22	London, N.W.—Timber ..	St. Pancras Borough Council ..	W. N. Blair, Borough Surveyor, Town Hall, St. Pancras, N.W.
" 25	Woolwich—Timber ..	Borough Council ..	F. Sumner, Borough Engineer, Maxey Road, Plumstead.
" 25	London, N.—Timber ..	Islington Borough Council ..	W. F. Dewey, Town Clerk, Town Hall, Upper Street, N.

List of Competitions Open.

DATE OF DELIVERY.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	DEPOSIT REQUIRED FOR CONDITIONS, &c.	BY WHOM ADVERTISED.
Feb. 20	Bangor—Workmen's Houses ..	£21, £10 10s.	—	J. Gill, City Surveyor, Bangor.
Mar. 1	Ilkley—Free Library, &c. ..	£100, £50, £20.	£1 is.	F. Hall, Clerk, Council Offices, Ilkley.
" 1	Stockton-on-Tees—Enlargement of Chancel ..	—	—	Holy Trinity Vicarage, Stockton-on-Tees.
" 31	St. Helens—Two Branch Public Libraries ..	£20, £40.	£1 is.	W. H. Andrew, Town Clerk, Town Hall, St. Helens.
" 31	Vienna—Machinery to Lift Boats on Canal ..	100,000, 75,000 & 50,000 kronen.	—	Austro-Hungarian Consulate-General, 22 Laurence Pountney Lane E.C.
April 6	Perth—Hospital ..	£31 10s., £21, £10 10s.	—	J. Begg, Town Clerk, Perth.
" 8	Malvern—Library ..	£30, £20, £10.	—	H. L. Whately, Clerk, Council Offices, Malvern.
" 30	Newcastle-upon-Tyne—Grammar School ..	£100, £50, £25.	£1 is.	H. J. Criddle, 2 Collingwood Street, Newcastle-upon-Tyne.

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Glasgow Show Rooms:
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This register is compiled to bring together Employer and Employed, to their mutual advantage, thus supplying a long recognised need.

In the building trades when a rush of work comes an employer suddenly finds himself in urgent need of employees. Our scheme is designed to assist him. Employees cannot afford to regularly advertise. After the week in which the advertisement appears it is lost. By our scheme we sustain these advertisements for six weeks. For 3/- we give three insertions (four lines) in our "Appointments Wanted" column (*see* page xvi), and also six insertions in the "Employment Register."

Instructions.—Advertisers must furnish their names and full addresses, which will not be published; and a number is assigned to each for identification. All communications will be treated in the strictest confidence. Abbreviations employed:—s., salary required; ex., experience; refs., references; yrs., years.

ARCHITECTS' ASSISTANTS.

- 121.—ARCHITECT'S ASSISTANT. Age 27. Good ex. in all branches of work.
- 125.—ARCHITECT'S ASSISTANT, age 22, competent in all branches, mod. s., good ex.
- 126.—ARCHITECT'S ASSISTANT. 9 yrs. ex.; efficient in all branches.
- 132.—ARCHITECT, with own office, can assist with wkg. drawings, details, perspectives, &c.
- 133.—ARCHITECT can assist with quantities, &c. 12 yrs. ex., mod. terms.
- 135.—ARCHITECT'S ASSISTANT. Experienced, construction, design, quantities, and specifications.
- 138.—ARCHITECT AND SURVEYOR'S JUNIOR ASSISTANT. 4½ yrs. ex., wkg. drawings, details, surveying, &c.
- 139.—ARCHITECT'S ASSISTANT. 5½ yrs. general ex. Small s.
- 140.—ARCHITECT AND SURVEYOR'S JUNIOR ASSISTANT, first class ex., church and domestic Details, surveying and measuring up.
- 146.—ARCHITECT'S JUNIOR ASSISTANT. Age 19. 5 yrs. ex., excellent testimonials, desires engagement in Midlands.
- 149.—ARCHITECT'S ASSISTANT. Good ex., requires engagement, wkg. drawings, details, surveying, quantities, &c.
- 151.—ARCHITECT'S JUNIOR ASSISTANT (22), 4 yrs. ex., good draughtsman, gen. ex.
- 156.—ARCHITECT with own office desires to assist other Architects. Wkg. drawings, perspectives, details, mod. terms.
- 159.—ARCHITECT (25), desires engagement in good office, would entertain partnership, refs.
- 161.—ARCHITECT'S ASSISTANT (27), good refs., wkg. and detail drawings, requires situation.
- 163.—ARCHITECT'S ASSISTANT, capable and experienced in all branches, ex. refs. mod. s.
- 164.—ARCHITECT'S ASSISTANT, 5 yrs. ex., wkg. drawings, details, &c., London or District preferred, mod. s.
- 167.—ARCHITECT'S and SURVEYOR'S ASSISTANT, age 22, wkg. drawings, specifications, details, surveying, 6 yrs. ex., sal. 25s.
- 168.—ARCHITECT'S and SURVEYOR'S ASSISTANT, 6 yrs. ex. Designs, wkg. drawings, specifications, and surveying. Ex. testimonials.
- 172.—ARCHITECT'S JUNIOR ASSISTANT, 4 yrs. ex., mod. s., wkg. draw., levelling, and specifications, South Coast.
- 175.—ARCHITECT'S ASSISTANT (23), 5 yrs. ex., sal. 30s., details, perspectives, &c., S. of Eng. or London.

BRICKLAYERS.

- 122.—BRICKLAYER. Young and energetic. refs. given.
- 123.—BRICKLAYER, 12 yrs. London ex. in firm of heating engineers, open to contract for installations.
- 184.—YOUNG MAN. 4 yrs. ex. Assistant to foreman or master bricklayer. Energetic.

CARPENTERS.

- 157.—CARPENTER, steady, good all-round man, wants job.

CLERKS.

- 128.—ARCHITECT'S ASSISTANT. Refs. Ex. in quantities, estimating, and accounts, &c.
- 137.—BUILDER'S CLERK seeks appt. Correspondence, tracing, and office routine.
- 181.—JUNIOR CLERK, age 19, office routine, requires job in Builder's office.

CLERK OF WORKS.

- 131.—CLERK OF WORKS. Experienced and reliable; excellent refs.
- 179.—CLERK OF WORKS just finishing £90,000 job, re-engagement wanted.

DECORATORS.

- 120.—Young man (18), wants job on country estate as gilder, decorator, or grainer. Good refs.
- 141.—HOUSE DECORATOR requires work, repairs and dilapidations, mod. charges

DESIGNERS, TRACINGS, &c.

- 124.—ASSISTANCE GIVEN TO ARCHITECTS in plans, specifications, quantities, &c.
- 129.—DRAUGHTSMAN disengaged.
- 130.—DRAUGHTSMAN desires evening work. Drawings, tracings, &c.
- 147.—DESIGNS, CARTOONS for Stained Glass and Mosaics, &c., by first-class figure draughtsman.
- 148.—DRAUGHTSMAN desires evening work. Perspectives, tracings, surveys, wkg. or competition drawings.
- 150.—DRAUGHTSMAN or BUILDER'S CLERK (20), 2 yrs. architectural ex., mod. s.
- 186.—DESIGNER (young lady), 4 yrs. ex., wallpapers, cretonnes, &c., specimens submitted.

FOREMEN.

- 155.—BUILDER'S GENERAL FOREMAN. Good refs., wants job.
- 160.—GENERAL FOREMAN (45), practical carpenter and joiner, good refs.
- 188.—FOREMAN, general or wkg., experienced, mod. s., abstainer, trade carpenter.

JOINERS.

- 183.—JOINERS' FOREMAN and MACHINIST, 16 yrs. ex., good refs., practical. Suburbs or S.E. Coast.
- 189.—JOINERY, CARCASSING, STAIRS, undertaken. Lowest prices.

MACHINISTS.

- 144.—MACHINIST (22), requires berth in Midlands, genl. knowledge of requirements.
- 158.—MACHINIST can work circular saw, overhand, and thicknessing machines, joinery, cabinet, and general work, good refs.

MISCELLANEOUS.

- 152.—BUILDER'S ASSISTANT (24), genl. office routine and benchwork.
- 154.—TRAVELLER or MANAGER for building materials or coal merchant, thorough knowledge of both trades, good accountant.
- 185.—HANDY MAN. Good refs. Wants job in factory, warehouse or estate. House repairs. Own tools.

PLUMBERS & FITTERS.

- 134.—PLUMBER (23), gasfitting, wants situation.
- 142.—PLUMBER. Electric and pneumatic bells, &c., &c.
- 143.—PLUMBER, married, total abstainer, well up in all branches, seeks permanent job in country.

QUANTITY SURVEYOR.

- 170.—BUILDER'S SURVEYOR, experienced, good refs., quantities, measuring, adjusting accounts.
- 174.—QUANTITY SURVEYOR, experienced, open to render assistance or do quantity work.
- 176.—CONTRACTOR'S ASSISTANT. Ex. on large wks. Levelling, measuring, quantities, &c.
- 180.—QUANTITY SURVEYOR'S JUNIOR ASSISTANT, good refs., abstracting, billing, assist in taking off.

STAIR AND RAIL HAND.

- 136.—STAIRCASE HAND, experienced in all kinds of stair and rail work.

For "Too Late for Classification" *see* page xvii.

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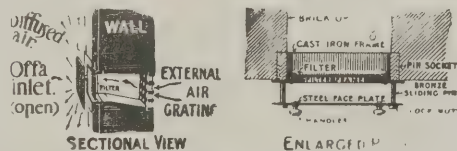
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When writing to Advertisers please mention **The Builders' Journal.**

Tenders.

Information from accredited sources should be sent to "The Editor" at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Addressed postcards on which lists of tenders may be stated will be sent post free on application to the Manager, BUILDERS' JOURNAL, 6, Great New Street, Fetter Lane, E.C.4.

Bardney (Lincs).—For water-supply works. Messrs. Elliott & Brown, engineers, Burton Buildings, Parliament Street, Nottingham:—

F. M. Thompson & Sons, Nottingham	£2,105 0 0
W. H. Pickin, Rickmansworth	2,050 0 0
K. Miller, Minton, Horncastle	2,022 0 0
J. Hutchinson & Son, Nottingham	1,850 16 4
W. H. Parker & Son, Boston	1,975 0 0
Bower Brothers, West Bridgford, Notts	1,060 0 0
Lane Brothers, Mansfield	1,941 7 0
Jenkins & Son, Leamington	1,897 14 0
H. Ashley, Mansfield	1,850 16 4
F. Pattinson, Ruskington, Lincs	1,781 9 6
Langley & Westmoreland,* Kirtou, Boston	1,749 9 0

* Accepted.

Cardiff.—For the erection of mortuary buildings in Crawshaw Lane, Penarth Road, for the Corporation. Mr. W. Harpur, M.I.C.E., borough engineer:—

J. Allan & Son	£1,583 2 3
Lattay & Co.	1,574 13 10
D. Davies	1,453 0 0
A. W. Cadwallader	1,457 17 5
Gough Brothers	1,429 0 0
G. Griffiths	1,428 0 0
D. W. Davies	1,382 0 0
F. Bond	1,370 5 8
G. Paltridge	1,309 7 8
F. Small	1,317 0 0
Blacker Brothers	1,299 16 0
Knox & Wells	1,297 10 0
C. Beames & Nephew	1,284 15 5
W. Symonds & Co.	1,259 0 0
E. Williams	1,251 6 3
Tucker Brothers	1,242 0 0
E. Turner & Sons	1,229 10 6
W. T. Morgan,* Fair Oak Road	1,200 0 0

* Accepted.

[All of Cardiff.]

Greenwich.—For the erection of a mortuary, post-mortem room, &c., Lamb Lane, for the Greenwich Borough Council. Mr. Alfred Roberts, architect, 18, Nelson Street, Greenwich:—

B. Sargent & Co.	£2,999 0 0
J. F. Holliday	2,558 0 0
F. T. Thorne	2,300 0 0
Enness Brothers	2,270 0 0
S. J. Jerrard & Sons	2,249 0 0
C. R. Price	2,244 0 0
Lole & Lightfoot	2,241 0 0
Holliday & Greenwood	2,237 0 0
J. O. Richardson	2,168 0 0
C. Ansell	2,195 0 0
Foster Brothers	2,166 0 0
J. Parsons	2,146 0 0
H. Somerford & Son	2,145 0 0
B. E. Nightingale	2,141 0 0
T. G. Sharpington	2,128 0 0
H. Groves	2,116 0 0
W. Martin	2,102 0 0
H. Kent	2,100 0 0
F. J. Gorham	2,091 5 10
Thomas & Edge	2,079 0 0
J. Ferguson & Co.	2,070 0 0
W. Mills,* St. George's Road, Blackheath	2,068 0 0

* Provisionally accepted.

Newton Abbot (Devon).—For the construction of a masonry reservoir to contain 50,000 gals., providing and laying 2,800yds. 4in. and 1,800yds. 3in. cast-iron water-mains, together with fire hydrants and other special castings for the waterworks, for the R.D.C. Mr. Samuel Segar, engineer, Union Street, Newton Abbot:—

J. F. Brice, Nottingham	£3,505 0 0
W. C. Shaddock, Plymouth	3,400 0 0
Pethick Brothers, Plymouth	3,333 0 0
S. Roberts, Plymouth	3,095 0 0
J. Shaddock, Plymouth	2,802 2 4
Jenkins & Son, Leamington	2,800 0 0
R. Yeo & Sons, Torquay	2,719 0 0
J. C. Lang, Liskeard	2,686 0 0
J. Dean & Co., London	2,480 18 0
E. Pike, Torquay	2,415 0 0
Dart & Pollard, Paignton	2,385 0 0
P. Wilson & Co., Purton	2,263 0 0
W. E. Bennett, Salcombe	2,153 2 6
Hawkins & Best,* Teignmouth	2,005 0 0

* Accepted.

(Continued on next page.)

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(See displayed Advt. in issue for January 27, p. ii.)

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BRICK MOULDING MACHINES

With PUGMILL Combined.

Suitable for any clay that can be made into bricks. They are in use in all parts of the world. Up-to-date improvements.

No. 1. Horse power, £50; with steam gearing, £60.

No. 2. Horse power, £75; with steam gearing, £90.

No. 3. Self-acting machine, will mould best sand-faced bricks better and cheaper, and with less power and less labour, than any other machine in the world.

It is also adapted for moulding clamp bricks with ashes mixed with the clay, and can be worked with only

TWO MEN AND TWO BOYS.

One man to wheel the clay to the machine. One boy to load the bricks on the wheelbarrows.

One boy to wheel the bricks off to the hacks or drying ground.

One man to set the bricks off on the hacks. Will make any number of bricks required up to 800 per hour, there being no moulder nor "walk-flatter" required.

Price, Steam power, £130.

No. 4. Self-acting machine is for moulding Fire Bricks, moulding them in water in the same way as for hand moulding, and will also mould any kind of clay in water. The machine can be driven at any speed up to 900 bricks per hour.

Price, Steam power, £130.

The clay is worked the same stiffness as for hand moulding in all the machines.

For further particulars address,

P. BAWDEN, 5, Cedar Road, Tottenham, London, N.

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BURSLEM. MANCHESTER OFFICE: 49 DEANSGATE.

W.C. CERAMIC MOSAIC SPECIALISTS

TENDERS—cont.

Walthamstow.—For a corrugated iron shed, inclined roadway, and a chimney shaft for a refuse destructor, for the Walthamstow U.D.C. Mr. G. W. Holmes, A.M.I.C.E., engineer:—

Corrugated iron shed and inclined roadway.

Baker & Co.	£2,200
W. E. Wood	1,901
Pierson & Co.	1,805
Westwood & Co.	1,770
Brownlie, Murray & Co.	1,689
Rowlingson	1,640
Braby & Co.	1,571
Cross & Cross	1,495
Norton Brothers	1,410
Wood & Co.	1,389
Smith & Co.*	1,354

Inclined roadway (builders' work).

A. T. Catley	£450
W. Manders*	420

* Accepted.

Wimbledon.—For the supply and erection of a complete water-softening and storage plant at the electricity works, for the U.D.C. Mr. H. Tomlinson-Lee, electrical engineer:—

W. Bobby	£2,427	0	0
Bowes-Scott & Western	1,975	0	0
Royles, Ltd.	1,800	0	0
Mather & Platt	1,750	0	0
T. Waite	1,690	0	0
Babcock & Wilcox	1,526	0	0
Doulton & Co.	1,514	12	10
Lassen & Hjort	1,450	0	0
Doulton & Co.	1,412	9	10
Doulton & Co.	1,399	5	4
Potter & Co.	1,350	0	0
Gimson & Co.	1,336	0	0
A. Koppel	1,200	0	0
Masson, Scott & Co.	1,197	0	0
Pennison Engineering Co.*	1,153	0	0
Kennicott Water Softener Co.	1,150	0	0
Baker's Patent Appliances Co.	958	0	0

* Recommended for acceptance.

Coming Events.

Wednesday, February 10.

SANITARY INSTITUTE.—Discussion on "Road Sanitation," to be opened by Mr. J. Patten Barber, M.I.C.E., and Louis C. Parkes, M.D., at 8 p.m.

GLASGOW ARCHITECTURAL ASSOCIATION.—Mr. James A. Morris on "The Planning of a Small House," at 8 p.m.

EDINBURGH ARCHITECTURAL ASSOCIATION (Associates' Section).—Mr. Charles Mackie, A.R.S.A., on "Common-sense in Art," at 8 p.m.

NORTHERN ARCHITECTURAL ASSOCIATION.—Mr. W. H. Wood on "Fifteenth-Century Architecture," at 7.30 p.m.

SOCIETY OF ARTS.—Mr. C. Vernon Boys, F.R.S., on "Thermit: Its Application to Metallurgical Engineering," at 8 p.m.

Thursday, February 11.

LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY.—Prof. Beresford Pite, F.R.I.B.A., and Mr. W. H. Seth-Smith, F.R.I.B.A., on "Registration as affecting Architecture and Architects," at 6.30 p.m.

SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part I.).—Mr. J. Priestley on "Sanitary Law"—(a), at 7 p.m.

INSTITUTE OF ELECTRICAL ENGINEERS.—Prof. R. M. Walmsley, D.Sc., on "Transatlantic Engineering Schools and Engineering," at 8 p.m.

MANCHESTER SOCIETY OF ARCHITECTS.—Prof. S. H. Capper, M.A., A.R.I.B.A., R.C.A., on "Education in Architecture," at 6.45 p.m.

SOCIETY OF ANTIQUARIES.—Meeting at Burlington House, W., at 8.30 p.m.

CAMERA CLUB.—Mr. G. A. T. Middleton on "Perspective from an Architect's Standpoint," at 8.15 p.m.

Friday, February 12.

SURVEYORS' INSTITUTION.—Annual Dinner at the Grand Hall, Princes Restaurant, Piccadilly, at 7 p.m.

SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part I.).—Mr. E. J. Steegmann on "Sanitary Law"—(b), at 7 p.m.

BIRMINGHAM ARCHITECTURAL ASSOCIATION.—Mr. W. A. Harvey on "Cottage Homes," at 8 p.m.

GLASGOW TECHNICAL COLLEGE ARCHITECTURAL CRAFTSMEN'S SOCIETY.—Mr. J. Jeffrey Waddell on "City Architecture," at 8 p.m.

INSTITUTE OF CIVIL ENGINEERS (Students' Meeting).—Mr. T. S. Nash on "The Electricity and Destructor Station at Plumstead," 8 p.m.

ROYAL INSTITUTION.—The Dean of Westminster on "Westminster Abbey in the Early Part of the Seventeenth Century," at 9 p.m.

Saturday, February 13.

SANITARY INSTITUTE (Inspections and Demonstrations for Sanitary Officers, Part I.).—Inspection and Demonstration at the Battersea Municipal Milk Depot and Disinfecting Station at 2.15 p.m., conducted by Mr. G. F. McCleary, M.D.

ROYAL INSTITUTION.—Dr. C. Waldstein on "Culture and Sculpture"—II., at 3 p.m.

Monday, February 15.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.—Prof. Frank Clowes, D.Sc., on "The Bacteriological Disposal of Sewage from Isolated Buildings," at 8 p.m.

SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part I.).—Mr. J. Priestley, B.A., M.D., M.R.C.S., D.P.H., on "Sanitary Law"—(c), at 7 p.m.

INSTITUTE OF SANITARY ENGINEERS (Lectures in Practical Sanitary Science).—Mr. J. Priestley, B.A., M.D., on "Sanitary Law," at 7 p.m.

Tuesday, February 16.

NORTHERN ARCHITECTURAL ASSOCIATION (Students' Sketching Club).—Annual Social Gathering and Exhibition of Sketches and Measured Drawings in the Hall of the Church Institute, Hood Street, Newcastle-on-Tyne, at 7.30 p.m.

SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part I.).—Mr. E. J. Steegmann, M.B., on "Meteorology," at 7 p.m.

Wednesday, February 17.

SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part I.).—Mr. Reginald Dudfield, M.A., M.D., on "Duties of a Sanitary Inspector"—(a) Outdoor, at 7 p.m.

EDINBURGH ARCHITECTURAL ASSOCIATION.—Mr. R. H. Bow, C.E., on "The Strength of Scaffolding," at 8 p.m.

ARCHITECTURAL ASSOCIATION (Discussion Section).—Mr. Walter Williams on "The Legal Position of the Architect," at 7.30 p.m.

Trade and Craft.

Pipe Heads: Casements.

A very attractive card illustrating a number of new designs for rainwater heads has been sent to us by Messrs. George Wragge, Ltd., the well-known Manchester firm (London showroom, 211, Shaftesbury Avenue). These are being made in cast lead and in iron, the former without the usual wood patterns, using plaster models instead and casting the lead in sand, by which means a very fine surface texture is obtained. The designs are all modern in their motives and arrangement, some of them being particularly good. Messrs. Wragge also send us particulars of their in-and-out casement, the advantages of which are, that being hung 4 in. from the jamb the glass can be cleaned with perfect safety from the inside, and one can also get at the fixed glass on either side of a three-light window; there is no interference with curtains, blinds, &c., no loose slips, bolts or parts to cause trouble, no special rebates; and the cost is very little more than an ordinary side-hung casement. Another speciality which Messrs. Wragge have introduced is a ventilator designed by Mr. C. F. A. Voysey which, occupying only a part of the window, is very economical and convenient.

Bankruptcies.

[Abbreviations: R.O.—receiving order; P.E.—public examination; C.C.—county court; O.R.—official receiver; Adj.—Adjudication.]

DURING THE WEEK ending February 5th twenty-three failures in the building and timber trades in England and Wales were gazetted.

J. W. SIMONS, builder, Bradford. Adj. Jan. 28th.

C. H. THORNTON, builder, Halifax. R.O. Jan. 23rd.

ROGERS & Co., builders, London, S.W. Adj. Jan. 28th.

VINEY & STONE, builders, London, N. Adj. Jan. 30th.

S. & F. SMITH, builders, Great Yarmouth. R.O. Jan. 29th.

S. S. WHERLEY, architect and surveyor, Newcastle-on-Tyne. Adj. Jan. 29th.

W. A. WALTERS, late builder, Cardiff. Gross liabilities £3,758.

W. S. WOOD, joiner and builder, Liverpool. Liabilities £4,854; assets £1,152.

A. J. DALE, architect and surveyor, Bristol. Adj. Jan. 26th.

G. HOULT, plumber and painter, Warrington. R.O. Jan. 26th.

C. REDHEAD & Co., timber merchants, Waterloo and Bootle. First meeting, O.R.'s, Liverpool, Feb. 10th, at 12 P.E., Liverpool C.C., Feb. 18th, at 11.

W. H. ARBER, architect and surveyor, London R.O. Jan. 28th. First meeting, Bankruptcy Court, Feb. 11th, at 12 P.E., same, March 8th, at 12.

J. BAIN, builder, Hammersmith. R.O. Jan. 26th. First meeting, London Bankruptcy Court, Feb. 9th, at 11 P.E., same, March 2nd, at 11.30.

W. ANTILL & Co., builders, Camden Town. Liabilities £10,212; assets not equal to 10s. in the £ on the amount of unsecured liabilities. Discharge granted last week.

H. BARNETT, builders' merchant, London, N.E. Liabilities £15,217; £7,937 expected to rank; assets £1,616.

S. PARMENTER, builder and contractor, Brentwood. First meeting, Great Eastern Hotel, London, E.C., Feb. 11th, at 1 P.E., Chelmsford Shirehall, March 2nd, at 10.

PIKE & STOCK, builders, Leytonstone and Ilford. R.O. Jan. 26th. P.E., London Bankruptcy Court, March 4th, at 11.30.

Current Market Prices.

		£	s.	d.	£	s.	d.
FORAGE.							
Beans	per qr.	1	14	0	2	0	0
Clover, best ..	per load	4	5	0	4	10	0
Hay, good ..	do.	3	12	6	4	0	0
Sainfoin mixture ..	do.	3	15	0	4	5	0
Straw	do.	1	10	0	2	0	0

		£	s.	d.	£	s.	d.
OILS AND PAINTS.							
Castor Oil, French ..	per cwt.	1	0	5	—	—	—
Colza Oil, English ..	do.	1	3	3	—	—	—
Coppers	per ton	2	0	0	—	—	—
Lard Oil	per cwt.	2	15	0	2	17	0
Lead, white, ground, carbamate ..	do.	1	4	10	—	—	—
Do. red	do.	1	0	4	—	—	—
Linseed Oil, barrels ..	do.	0	17	9	—	—	—
Petroleum, American ..	per gal.	0	0	7	0	0	7
Do. Russian	do.	0	0	5	0	0	7
Pitch	per barrel	0	8	0	—	—	—
Shellac, orange ..	per cwt.	3	2	6	3	5	0
Soda, crystals ..	per ton	1	6	0	1	6	3
Tallow, Town ..	per cwt.	1	6	0	—	—	—
Tar, Stockholm ..	per barrel	1	2	0	—	—	—
Turpentine	per cwt.	2	6	6	—	—	—

		£	s.	d.	£	s.	d.
METALS.							
Copper, sheet, strong ..	per ton	73	0	0	—	—	—
Iron, Stafs, bar ..	do.	6	0	0	8	10	0
Do. Galvanised Corrugated sheet ..	do.	10	7	6	10	10	0
Lead, pig, Soft Foreign ..	do.	11	6	3	—	—	—
Do. do. English common brands ..	do.	11	15	0	—	—	—
Do. sheet English 3lb. per sq. ft. and upwards ..	do.	14	0	0	—	—	—
Do. pipe	do.	15	0	0	—	—	—
Nails, cut, 3in. to 6in. ..	do.	9	5	0	—	—	—
Do. floor brads ..	do.	9	0	0	—	—	—
Steel, Stafs., Girders and Angles ..	do.	5	10	0	6	5	0
Do. do. Mild bars ..	do.	6	0	0	6	5	0
Tin, Foreign	do.	126	7	6	126	17	6
Do. English ingots ..	do.	126	5	0	126	15	0
Zinc, sheets, Silesian ..	do.	24	5	0	—	—	—
Do. do. Vieille Montagne ..	do.	24	10	0	—	—	—
Do. Spelter	do.	22	0	0	22	5	0

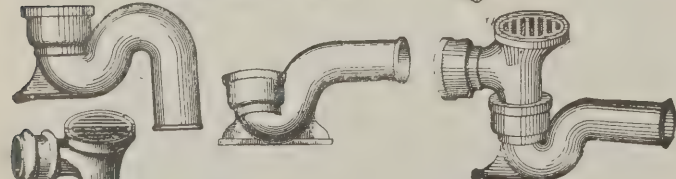
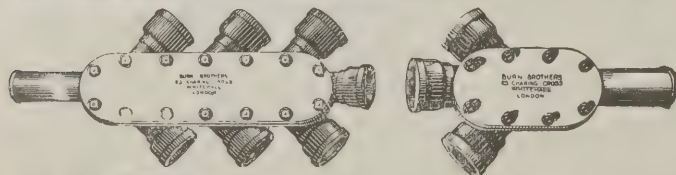
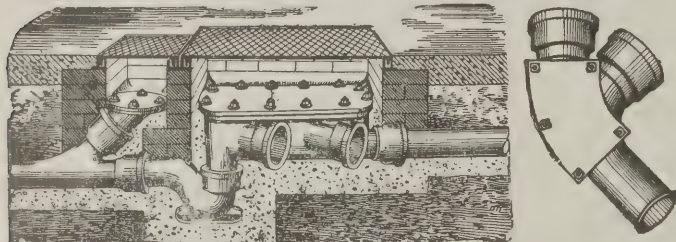
		£	s.	d.	£	s.	d.
TIMBER.							
SOFT WOODS.							
Fir, Dantzic and Memel ..	per load	1	13	0	3	0	0
Pine, Quebec, Yellow ..	do.	5	5	0	6	5	0
Do. Pitch	do.	2	11	0	2	16	0
Laths, log, Dantzic ..	per fath.	4	10	0	5	10	0
Do. Norrköping ..	per bundle	0	0	7	—	—	—
Deals, Mesane, White, 1st, 3x9 per std. ..	do.	11	15	0	—	—	—
Do. Süderhamm, Yellow, 3rd, 4x9 ..	do.	15	15	0	16	0	0
Do. Blankaholm, Yellow, 2nd, 4x7 ..	do.	9	0	0	9	10	0
Do. do. do. 4x7 ..	do.	8	15	0	—	—	—
Do. do. do. 4x6 ..	do.	8	10	0	8	15	0
Do. Sundsvall, Yellow, 5th, 3x9 ..	do.	9	0	0	—	—	—
Do. Oserko, Yellow, unsorted, 3x7 ..	do.	8	10	0	—	—	—
Do. do. do. 4th, 3x9 ..	do.	11	15	0	—	—	—
Do. Petschora, Yellow, 3rd, 3x9 ..	do.	11	10	0	—	—	—
Do. Archangel, Yellow, 2nd, 3x8 ..	do.	13	5	0	—	—	—
Do. do. do. 3x7 ..	do.	12	10	0	—	—	—
Do. Raumo, Yellow, unsorted, 3x9 ..	do.	8	15	0	—	—	—
Do. Kovda, White, Unsorted, 3x9 ..	do.	8	15	0	—	—	—
Do. Holmsund, Yellow, 3x9 ..	do.	5	7	6	—	—	—
Do. Batiscan, Bright, Spruce, 3rd, 3x9x13ft. ..	do.	9	5	0	9	10	0
Do. do. do. 3x9x11ft. ..	do.	8	10	0	—	—	—
Do. Soroka, Yellow, 2nd, 3x7 ..	do.	12	0	0	—	—	—
Do. do. do. 3rd, 3x7 ..	do.	10	5	0	—	—	—
Do. St. Petersburg, Vell., 1st, 3x9 ..	do.	15	10	0	—	—	—
Do. do. do. 3x11 ..	do.	16	10	0	17	15	0
Do. do. do. 1st, 2nd, & 3rd, 3x9 ..	do.	9	0	0	9	5	0
Do. do. Yellow, 3rd, 3x9 ..	do.	8	15	0	—	—	—
Do. do. White, 1st, 2nd & 3rd, 3x9 ..	do.	8	10	0	—	—	—
Do. do. White, Unsorted, 3x7 ..	do.	7	15	0	—	—	—
Do. Quebec Spruce, 3rd, 3x9 ..	do.	9	10	0	9	15	0
Battens, all kinds ..	do.	6	5	0	12	5	0
Scantlings	do.	6	1	0	9	15	0
Flooring boards in. pre-pared, 1st ..	per square	0	10	3	—	—	—
Do. 2nd	do.	0	9	0	0	9	6
Do. 3rd, &c. ..	do.	0	8	6	0	10	3

		£	s.	d.	£	s.	d.
HARD WOODS.							
Ash, Quebec	per load	3	12	6	—	—	—
Birch, St. John, 3x8 to 15 ..	do.	8	0	0	—	—	—
Box, Turkey	per ton	15	0	0	20	0	0
Cedar, Cuba	per ft. sup.	0	0	4	—	—	—
Do. Honduras ..	do.	0	0	4	—	—	—
Do. Tobasco ..	do.	0	0	3	—	—	—
Elm, Quebec	per load	4	2	6	—	—	—
MAHOGANY, Average Price for Cargo, Honduras ..							
Do. African ..	per ft. sup.	0	0	6	—	—	—
Do. St. Domingo ..	do.	0	0	4	—	—	—
Do. Cuba	do.	0	0	3	—	—	—
Do. Lagos	do.	0	0	3	—	—	—
Do. Benin	do.	0	0	3	—	—	—
Do. Tobasco ..	do.	0	0	3	—	—	—

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THE BUILDERS' JOURNAL

AND ARCHITECTURAL RECORD.

February 17, 1904. Vol. 19, No. 471.

6, Great New Street, Fetter Lane, E.C.

Summary.

The R.I.B.A., at the request of the London County Council, have submitted a series of recommendations in respect of the proposed amendment of the Building Act. In their opinion no one should be appointed as a district surveyor who has not been in practice as an architect for at least seven years, or as assistant to a practising architect for at least ten years; where discretionary power is given to the L.C.C., the superintending architect and district surveyors, there should be power of appeal to the Tribunal; greater publicity should be given to proposed new by-laws; the schedule of fire-resisting materials should be reconsidered. Important suggestions are made in regard to pier construction, skeleton-frame buildings and supports under superstructures. (Page 82.)

M. Choisy, the nominated recipient of the Royal Gold Medal, devoted more than twenty years to the preparation of his great book on architectural history. (Page 76.)

The American Institute of Architects has issued a revised schedule of charges, which include the 5 per cent. for usual work, 10 per cent. for alterations and additions to existing buildings, and a special fee for furniture, monuments, decorative and cabinet work in new buildings costing less than £3,000; one-fifth of the payments to be made on completion of the preliminary sketches; two-fifths when the working drawings and specifications are finished; and the remainder from time to time in proportion to the amount of work done. (Page 76.)

The first underground convenience in London was erected opposite the Royal Exchange in 1885; four years later came that at Piccadilly Circus, which makes a good profit, though as a rule such conveniences barely pay expenses. In the excavation for the recently completed underground at Liverpool Street between 200 and 300 skeletons were uncovered, being afterwards handed over to University College Hospital; the site was supposed to have been a plague pit. (Page 85.)

Professor Church states that about 11 ozs. of barium hydrate crystals are required for 1 gal. of distilled water in his treatment of decayed stonework. (Page 76.)

Reports speak of a coming boom in sanitary goods for South Africa. (Page 79.)

In a paper which he read before the R.I.B.A. on Monday evening Prof. Frank Clowes described the treatment of sewage at Christ's Hospital, Horsham, on the biological system. The effluent contained about 30 per cent. of oxygen and supported fish life, so that it could be turned harmlessly into a water-course. In a discussion that followed Dr. Fowler, of Manchester, laid stress on the desirability of having a good margin of safety in small installations. He spoke also of the filter used by Prof. Dunbar, of Hamburg, which consisted of about 6in. or 9in. of fine material on top, with coarse material below. (Page 81.)

The R.I.B.A. Recommendations on the Building Act.

THE LONDON COUNTY COUNCIL, warned by their failure last year to rush through Parliament their ill-considered and hastily prepared "Fire" Bill, are determined that their successors in April next shall be in possession of sufficient information upon the matters requiring amendment in the 1894 Building Act. Suggestions have been invited from many sources, and if all are of the same amplitude as those made by the Royal Institute of British Architects, the Council are likely to suffer from an *embarras de richesse*. The ten "general" suggestions open a wide field for contention. The proposition for all district surveyors to be drawn from the ranks of practising architects or their experienced assistants will not commend itself to all. Many will urge that modern forms of construction, particularly where cement and steel are in combination, can only be properly dealt with by a specially trained constructionalist to whom an experience of ordinary architectural practice will be of little value. If the Institute propose that district surveyors should be allowed to carry on a private practice, in this respect they court failure. Regrettable as it is on most grounds, abuse of privilege has rendered such a system impossible. Though the Institute propose to free London from the limitations imposed on her by "brick and stone" methods of building, we are glad to see that they do not suggest that the erection of skyscrapers should be favoured. We observe no suggestions from the architects for the transfer of any further powers to the new city and borough councils. Even the confusing section 84 receives scant attention, and it is surprising that fuller recommendations to amend it are not made. There is however little fear that the claims to notice of this section will be overlooked. One would have expected some proposition for rules to regulate and minimize the nuisance now caused by the pulling down of old buildings. The Institute lack the temerity to propose definitions of the words "building" and "structure," and though they suggest that the term "working classes" should be defined they discreetly go no further, and leave this task to others. The remarks as to streets are doubtless well-meant, but possibly the existing difficulties in the matter are more imaginary than real. The suggested amendment may be intended to legalize the convenient back ways to premises when a site is of sufficient area to permit them. Back ways paved for the use of vehicles are, however, even now laid out at the rear of blocks of flats in London, and apparently the only restriction imposed upon them by the County Council is the provision of gates at either end. The

Institute consider that the conditions governing the erection of workmen's dwellings should be relaxed, and one of their proposals is the deletion of section 13 (5), which now renders many sites useless for such purposes. One can readily agree that compensation should be given under section 13 (1). The community in general would gain if compensation could be more generally made in all cases, especially if at the same time local authorities could require the surrender of land for widening streets to a greater extent than the present Act requires. The institution of a "valuation" tribunal of experts on similar lines to the Tribunal of Appeal might enable compensation to be assessed rapidly and fairly without the heavy legal expenditure now involved. It is a surprise to find the Institute suggesting a relaxation of the power to cause buildings to be set back to the general line and that there is not proposed a new clause remedying the defect in the present Act which permits of its evasion by the erection of oriel and bay windows together on the same elevation. There is an obvious misprint or omission in the clause to be substituted for section 77. Most people are in accord as to the benefit resulting from the prohibition of sky signs, and there is little likelihood of their revival as suggested. The proposals as to the construction of hollow walls are welcome, but those relating to the adoption of special methods of construction, and evidently based on similar regulations in America, may not always meet London's requirements. One cannot help thinking that fewer regulations with regard to these buildings and more power to a well-qualified official would give better results than a series of precise rules, at any rate for some time to come. A provision in the new Act permitting by-laws on the subject would probably meet the case, as would seem to be the view of the R.I.B.A. The Institute ignore the vexed question of the payment of fees to the district surveyor, save so far as new duties are cast upon these gentlemen. This matter without doubt will be one which will receive great attention, particularly at the hands of borough councils. The details of the proposals made by the Institute are deserving of the most careful study. Though the suggestions do not evince a broad feeling of sympathy with the modern municipal spirit, they represent the opinions of experts possessing in a high degree the qualifications requisite for dealing with the subject. If to these views similar contributions from the Institutions of Civil Engineers and Surveyors be added, the County Council will not lack the best of advice upon the strictly technical aspects of the question before them.

M. CHOISY.

A Biographical Note by M. de DARTEIN,
Chief Engineer, Ponts et Chaussées.

M. AUGUSTE CHOISY having been nominated to His Majesty as the recipient of the Royal Gold Medal this year, we deemed it interesting to publish some particulars of his distinguished career. With this object in view, we communicated with M. Marie-Ferdinand de Darstein, who has been kind enough to furnish the following biographical note on his *confrère* in the Service des Ponts et Chaussées:—

François Auguste Choisy was born at Vitry-le-François (Marne) on February 7th, 1841. His father was an architect, and from him he very early acquired a taste for architecture and archaeology; and becoming convinced of the services which scientific knowledge could render in studies upon art, he entered the Polytechnic School. There he enjoyed the advice and kindness of an illustrious master, Léonce Reynaud, and this protection and direction opened up the way before him.

Admitted in 1863 into the staff of the Ponts et Chaussées, he divided his time between professional duties and architectural study. By a series of voyages in Italy, Sicily and Greece he acquired the elements of a history of Roman methods of construction. This was about to blossom forth when the war of 1870 broke out. The engineer then became soldier, and it was three years later before "*L'Art de Bâtir chez les Romains*" was published. In this first work M. Choisy put forward a view which was very much unexpected—that of a severe economy, a system of methods which aimed at reducing the cost of construction to a minimum. Léonce Reynaud and Viollet-le-Duc called attention to these conclusions, and at their instigation a mission was given to M. Choisy to enable him to enlarge his analysis of the Eastern Empire. This revealed still more surprising practices among the successors of the Romans—an architecture whose colossal vaults were carried out in the open without auxiliary supports, without centering of any sort. The recital of these methods was the purpose of a second publication, "*L'Art de Bâtir chez les Byzantins*" (1882).

M. Choisy, with the aid of his chief and friend, M. de Darstein, was then admitted into the ensign corps at the Ponts et Chaussées and Polytechnic Schools. At the former he lectured on architectural history, applying himself to that task with the double desire of initiating his young colleagues into the principles of the art and presenting to the public, in a comprehensive work, the whole development of the art from its origin down to the present day. More than twenty years were devoted to this, the great book appearing in 1899; and it is in respect of this work especially that the Institute intends to honour M. Choisy with the Royal Gold Medal.

The only interruptions in the long preparation were occasioned by a technical visit to the Sahara and a digression in regard to Greek inscriptions; the eminent philologist, Emile Egger, having indicated a subject which promised many revelations, namely, a survey of the arsenal of Piræus. Aided by these counsels, M. Choisy attempted the interpretation of the inscriptions, and afterwards of those on the walls of Athens and the Erechtheum, out of which came a miscellany entitled "*Etudes Epigraphiques sur l'Architecture Grecque*" (1884).

M. Choisy's most recent work, "*L'Art de Bâtir chez les Egyptiens*" (1904), embraces the whole of the methods by which such prodigious constructions as the temples, the pyramids and the monoliths were made possible at a time when windlass and tackle were unknown.

Besides his writings on architecture, M. Choisy has published picturesque narratives of his two chief voyages, these being titled "*L'Asie Mineure et les Turcs*" (1875) and "*Le Sahara: souvenir d'une Mission à El Goléa*" (1881).

In 1889 he became an honorary corresponding member of the R.I.B.A., and in the same year he was decorated with the cross of an officer of the Legion of Honour. In 1903 the Institute of France awarded to him the Prix Bordin, and before going into retirement (which he has consecrated to researches in Vitruvius) M. Choisy has been raised to the degree of Inspector-General in the Service des Ponts et Chaussées.

AMERICAN ARCHITECTS.

Revised Schedule of Charges.

THE American Institute of Architects has issued the following schedule of charges as revised at the Cleveland Convention held in October, 1903:—

The architect's professional services consist in making the necessary preliminary studies, working drawings, specifications, large-scale and full-size details, and in the general direction and supervision of the work, for which the minimum charge is 5 per cent. on the cost of the work.

For new buildings costing less than 10,000 dols. (£2,000), and for furniture, monuments, decorative and cabinet work, it is usual and proper to charge a special fee in excess of the above.

For alterations and additions to existing buildings the fee is 10 per cent. on the cost of the work.

Consultation fees for professional advice are to be paid in proportion to the importance of the questions involved.

None of the above charges cover alterations and additions to contracts, drawings and specifications, nor professional or legal services incidental to negotiations for site, disputed party-walls, right of light, measurement of work or failure of contractors.

When such services become necessary they shall be charged for according to the time and trouble involved.

Where heating, ventilating, mechanical, electrical and sanitary problems in a building are of such a nature as to require the assistance of a specialist, the owner is to pay for such assistance. Chemical and mechanical tests, when required, and necessary travelling expenses, are also to be paid for by the owner.

Drawings and specifications, as instruments of service, are the property of the architect.

The architect's payments are due as his work progresses in the following order: Upon completion of the preliminary sketches one-fifth of the entire fee; upon completion of working drawings and specifications, two-fifths; the remaining two-fifths being due from time to time in proportion to the amount of work done by the architect in his office and at the building.

Until an actual estimate is received the charges are based upon the proposed cost of the work, and payments are received as instalments of the entire fee, which is based upon the actual cost to the owner of the building or other work when completed, including all fixtures necessary to render it fit for occupation. The architect is entitled to extra compensation for furniture or other articles purchased under his direction.

If any material or work used in the construction of the building be already upon the ground or come into the owner's possession without expense to him, its value is to be added to the sum actually expended upon the building before the architect's commission is computed.

In case of the abandonment or suspension of the work, the basis of settlement is as follows:—Preliminary studies, a fee in accordance with the character and magnitude of the work; preliminary studies, working drawings and specifications, three-fifths of the fee for complete services.

The supervision of an architect (as distinguished from the continuous personal superintendence which may be secured by the employment of a clerk of works) means such inspection by the architect or his deputy of work in studios and shops, or of a building or other work in process of erection, completion or alteration, as he finds necessary to ascertain whether it is being executed in conformity with his drawings and specifications or directions. He is to act in constructive emergencies, to order necessary changes and to define the true intent and meaning of the drawings and specifications, and he has authority to stop the progress of the work and order its removal when not in accordance with them.

On buildings where the constant services of a superintendent are required a clerk of works shall be employed by the architect at the owner's expense.

Correspondence.

The Preservation of Stonework. To the Editor of THE BUILDERS' JOURNAL.

SUNDERLAND.

SIR,—Referring to the valuable reports of Professor Church, F.R.S., on the treatment of decayed stonework in the Chapter House at Westminster Abbey (published in your issue for February 3rd), could you say what proportion of baryta is required to 1 gal. of water and how it is mixed? From the report it would seem that 40zs. 350 grains of baryta to 1 gal. of water are necessary, but lime-water is also mentioned in the same paragraph, making it rather confusing.—Yours truly,

J. McMILLAN.

To the Editor of THE BUILDERS' JOURNAL.

SHELSLEY, KEW GARDENS.

SIR,—In reply to the above, I see nothing confusing in the fourth paragraph of the memorandum dated November 18th, 1903. Its first sentence is complete in itself. On p. 4 of the Parliamentary Paper will be found these words: "Pure baryta water saturated at the summer temperature." This is what is wanted; distilled water at 60 degs. Fahr. shaken up with barium hydrate crystals until no more of the latter are dissolved. This operation must be performed out of contact with the air. About 110zs. of barium hydrate crystals are required for 1 gal. of distilled water. These crystals cost wholesale about £13 to £15 per ton. Messrs. Julius Hülsen & Co., of Newcastle-upon-Tyne, make them, and also a richer product, which keeps better, though being in a compact and fused state, it is less easily and rapidly dissolved.—Yours truly,

A. H. CHURCH.

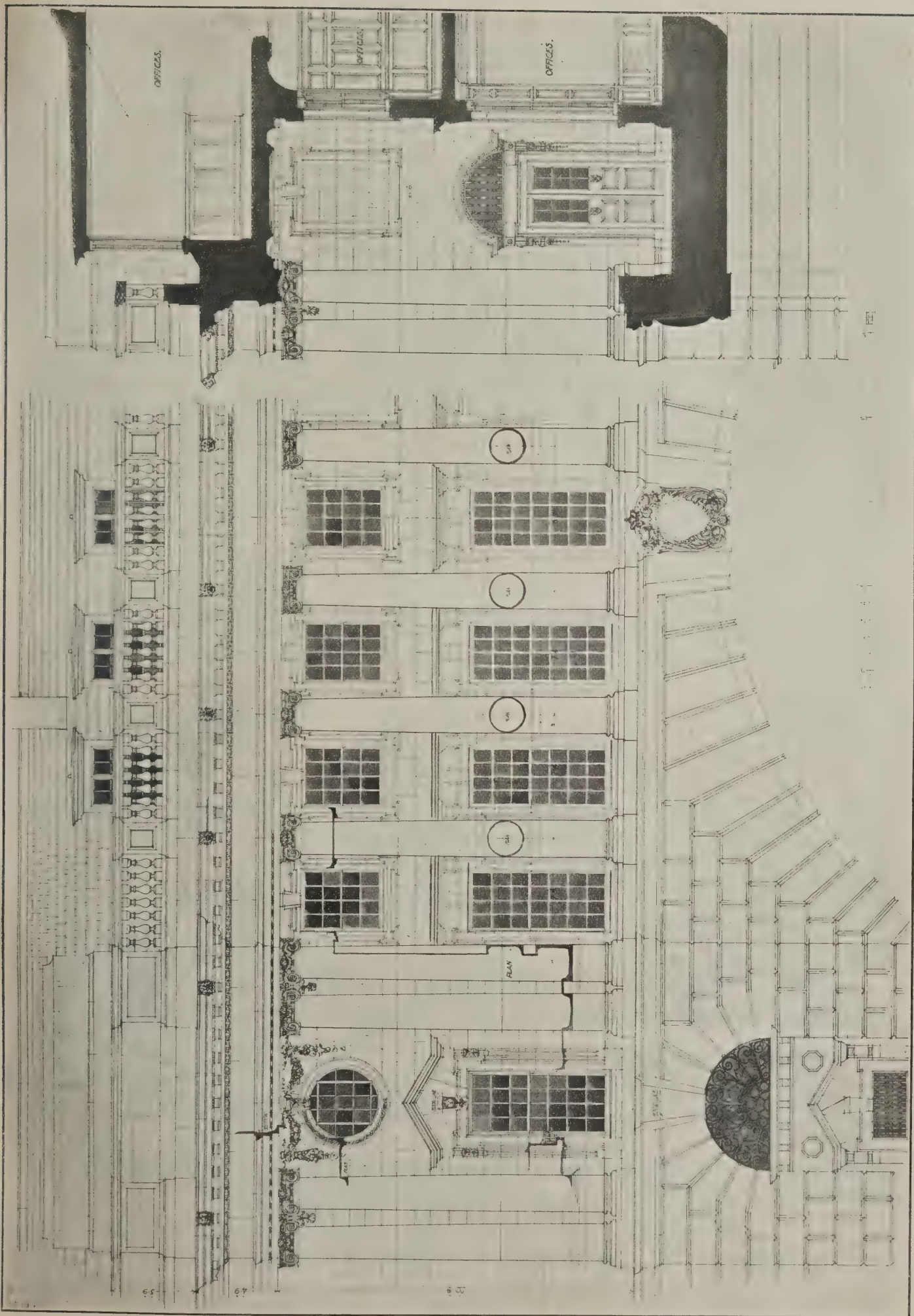
Brick Town Halls.

To the Editor of THE BUILDERS' JOURNAL.

LONDON.

SIR,—I should feel very much obliged if any reader would let me know, through the medium of these columns, of any interesting old brick town halls with which he is acquainted. There are doubtless many hidden away in villages which have been left behind in the development of commerce, but it is difficult to ascertain anything about them through the ordinary sources—such as gazetteers and encyclopædies.—Yours truly,

J. F. PRICE.



TITE PRIZE DESIGN FOR A CRESCENT IN A LARGE CITY: HALF ELEVATION AND SECTION OF ARCHWAY OVER STREET. BY HEATON COMYN, A.R.I.B.A.

Views and Reviews.

A Roman Island.

From the photographs which show him amid heaps of field rubbish, we are assured of the hale and heartiness of the author at the age of sixty-six, and we may comfortably dismiss the few rustics who spoke of his seeking "a crock of gold." Dr. Ely now leaves the spade and pickaxe to younger men (of whom there should be no lack in these treasure-hunting days) while he turns to the map of his excavations. For seven years past he has been digging at Hayling, which "owing to its insular character and its lying outside the lines of traffic," has to a great extent escaped the notice of the antiquary. Dr. Ely has not found anything phenomenal—a brooch or so, some fragments of pavement and indications of Roman houses—but he rests satisfied that there is now at least one blank space less in the map of Roman Britain. And so he has written this monograph on his work, which, having met with the approval of the examiners for the degree of Doctor of Literature in the University of London, is now submitted to a wider circle.

"Roman Hayling," by Talfourd Ely, D.Lit. M.A. (Lond.), F.S.A. London: Taylor & Francis, Red Lion Court, Fleet Street.

The Student's Electrical Book.

The second edition of this excellent book for students has three new chapters on alternate current working, these having been added in response to a repeated request, though, as the book is intended for first year students, it was the author's original intention not to deal with what is undoubtedly the most difficult part of the subject: he has done so however very lucidly, the letterpress being supplemented by clearly-drawn vector diagrams which, as Mr Sewell remarks, enable us to see at once what would

otherwise involve an intricate mathematical demonstration. The book deals with the principles and applications of electricity, and can be warmly recommended.

"The Elements of Electrical Engineering," by Tyson Sewell, A.I.E.E. London: Crosby Lockwood & Son, 7, Stationers' Hall Court. 7s. 6d. nett.

L.M.B.A. Diary and Handbook.

The 1904 diary and handbook of the London Master-Builders' Association (Bedford Street, Strand, 2s. 6d.) is neater in its get-up than last year's. The matter, however, remains much the same, though a good many pages about the water companies have been dropped and one or two new features added—the list of members is a very useful addition, so also are the new agreement and schedule of conditions of building contracts and the R.I.B.A. schedule of architects' charges. The history of the Association, which left off at the end of 1890 in last year's book, has now been carried to the end of 1892, and the legal matter supplemented with the trade-union Bill. The rest of the book furnishes particulars of wages, an index to the London Building Act, a list of the district surveyors, notes on electricity, tables of diameters and other miscellaneous information.

The Year's Art, 1904.

There is no other book that covers the field of "The Year's Art," which has become indispensable to artists and architects. The present edition is the twenty-fifth, thus completing the art record of a quarter of a century. It now contains a complete list of members of the Royal Academy since its inception in 1768 to the end of 1903, the roll of members of the Royal Institute of Painters in Water Colours since its foundation in 1831, increased information concerning American institutions, a greatly enlarged survey of art sales and an extended directory

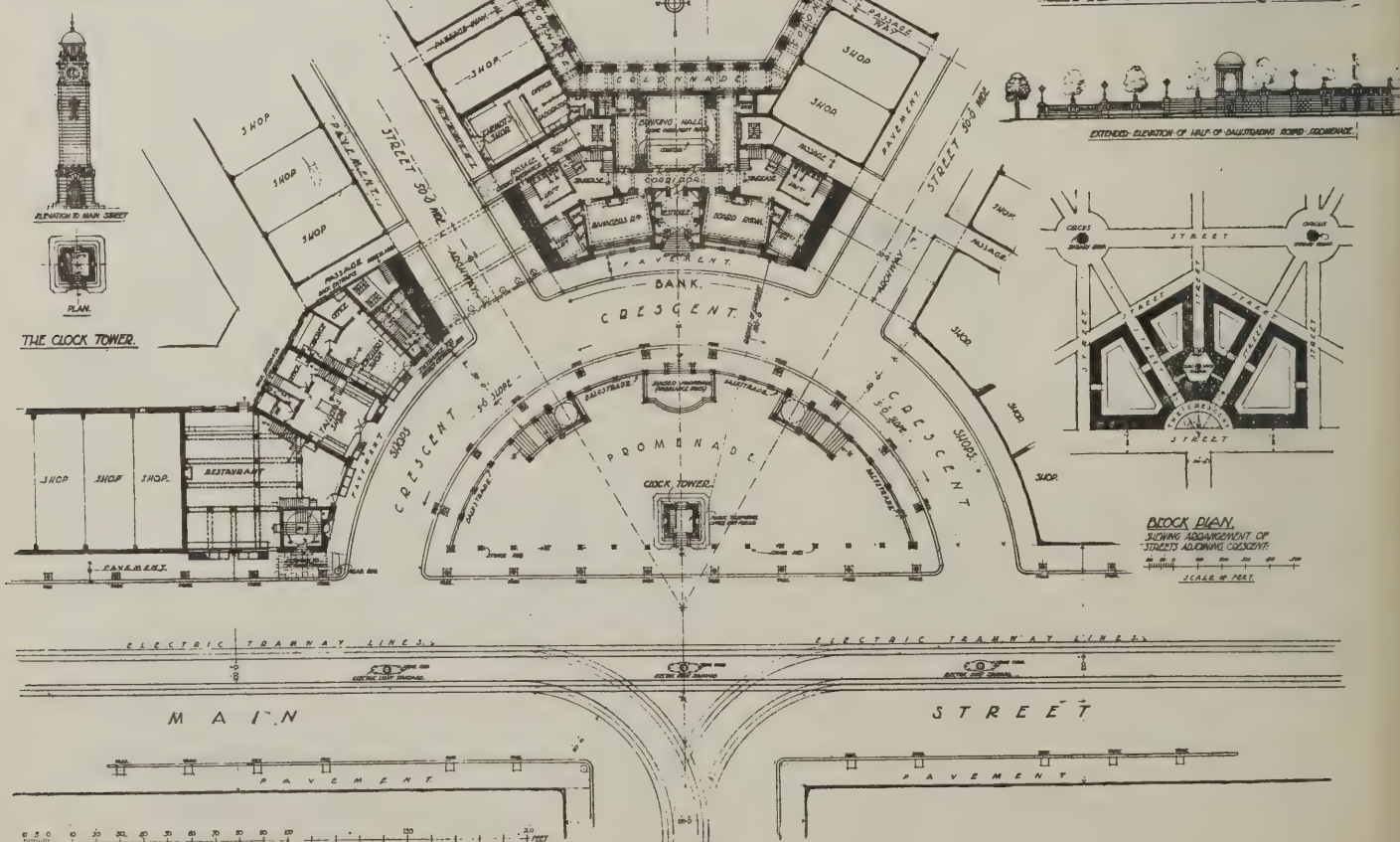
of artists and art workers—besides, of course, the multifarious particulars of all matters, schools and events connected with art. Mr. Statham contributes a commentary on the architectural features of the past year, and Mr. Carter, the editor, writes temperately about the Chantry Bequest agitation. Among the illustrations—which, by the way, are excellently printed—are a portrait of Sargent, a mosaic of pictures from the Liverpool Autumn Exhibition, 1903, and reproductions of the four Bouchers which realized 22,300 guineas in the famous Vaile sale.

"The Year's Art, 1904." London: Hutchinson & Co., 31, Paternoster Row, 3s. 6d.

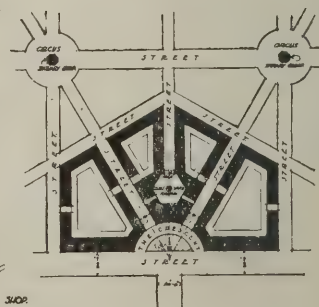
Geometry.

Mr. E. H. Sprague's book is an excellent little treatise. The author was principal of the Imperial Chinese Railway College, Shan-hai-Kuan, and is now assistant in the Engineering Department, University College, London, and his experience has led him to believe a small book was needed which should give a short general review of all the most important facts in geometry in an easy manner, and with the object of repairing the deficiency he offers this work. The experience of all who instruct architectural or engineering students must be similar. We have on several occasions called attention to the possibility of making the subject of geometry and mathematics, usually accepted as difficult, easy of acquisition. It is neither desirable to waste valuable time on the part of a student, however young (for it might be devoted to the doing of something valuable either to his mental or physical culture), nor to delude oneself with the idea that though the knowledge he is acquiring with labour is not utilitarian it nevertheless is training his mental faculties—a view which we believe most schoolmen hold—because such a training can be as well obtained in the instruction of know-

DESIGN FOR A CRESCENT. TITLE PRIZE R.I.B.A. 1903.



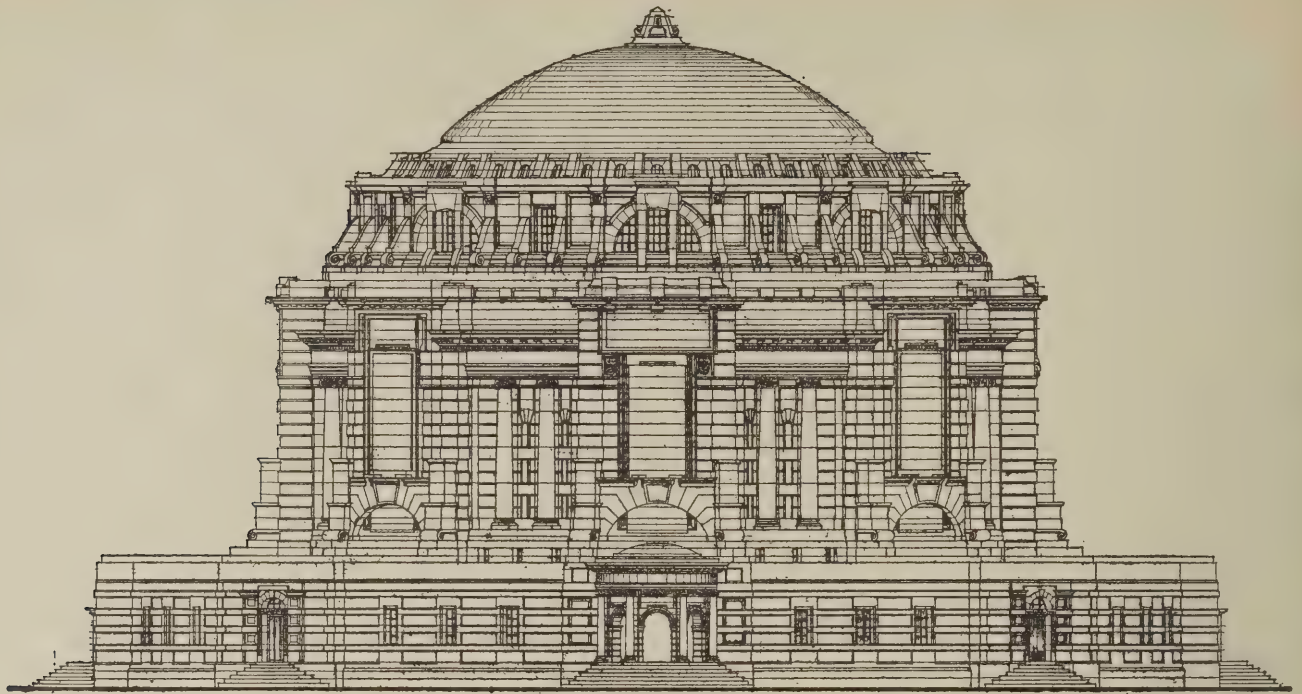
DIAN SHUEING GENERAL SETTING OUT OF CRESCENT.



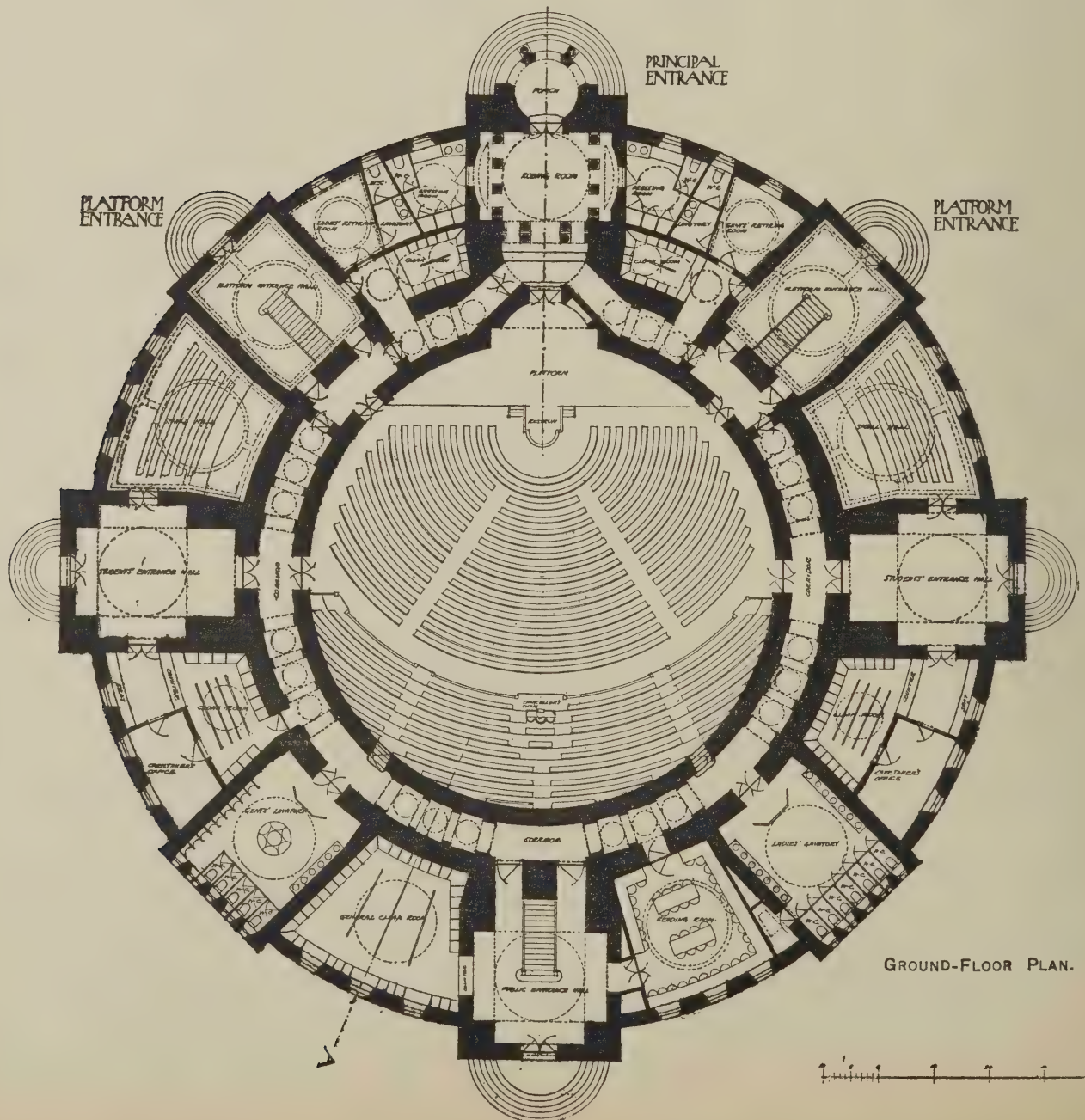
DICK DIAN,
SHOWING ARRANGEMENT OF
STREETS ADJOINING CRESCENT.
SCALE 1/4 INCH = 10 FEET

BY HEATON COMYN, A.R.I.B.A.

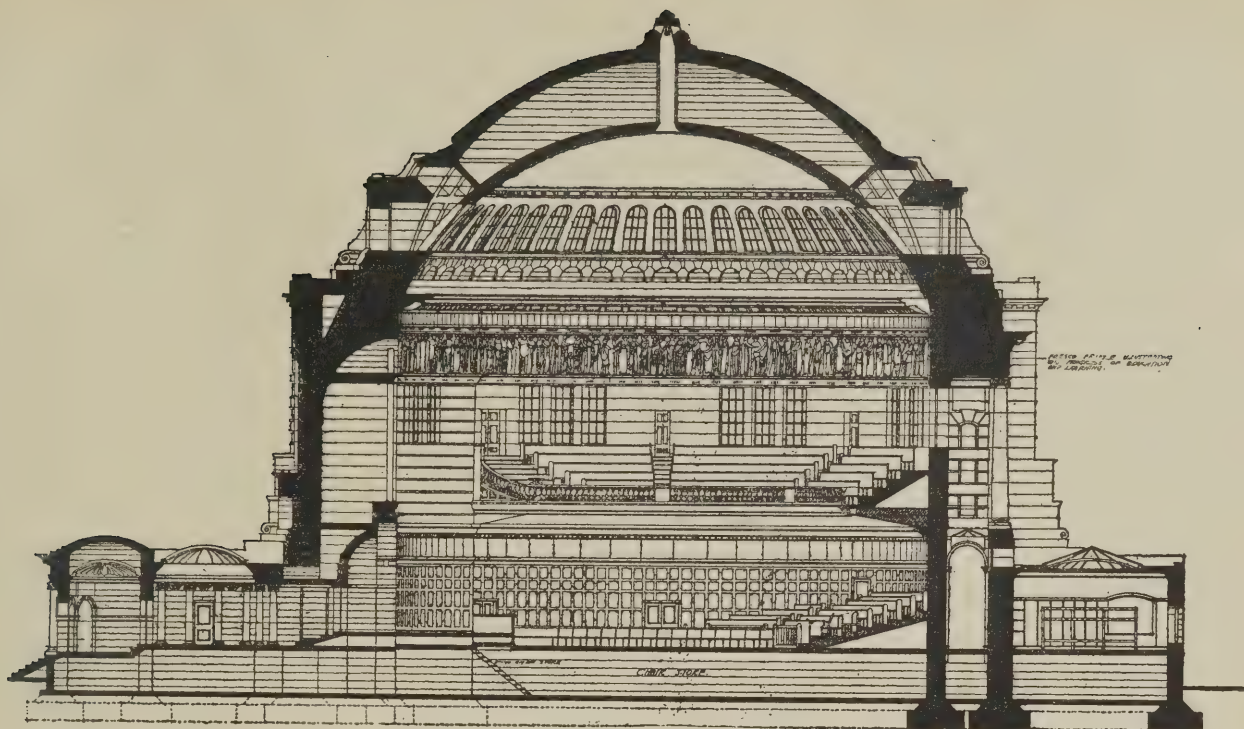
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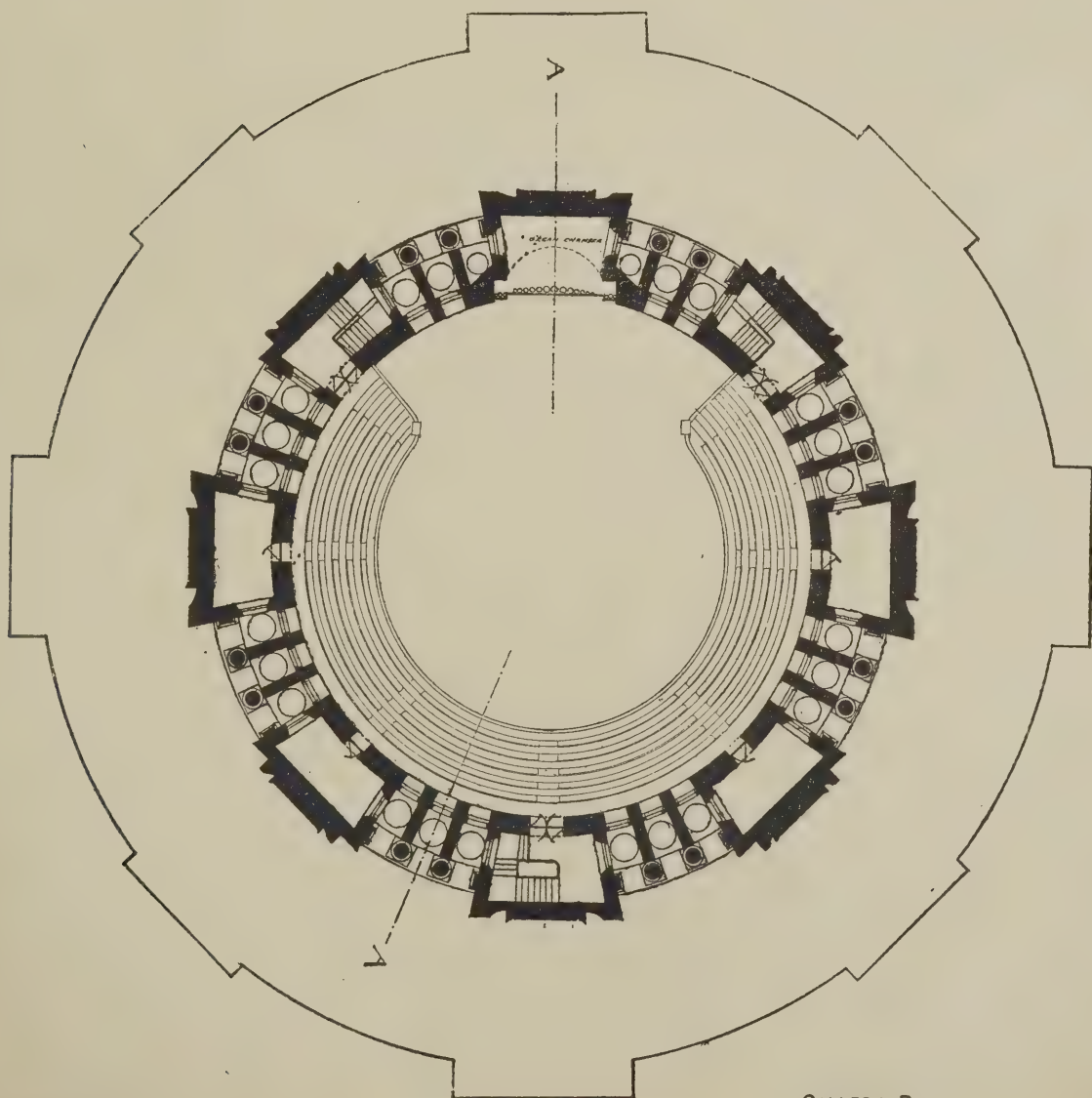
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edge which shall be of lasting and material use throughout life. This little volume will, we venture to think, help in that reform which has been going on for some time in technical education, namely, the simplification of instruction. The author has been largely indebted to the German treatise of Schlömilch. The book is arranged in problems after Euclid's manner, but the explanations are critical and homely and the order is by no means that of the original, the subject being treated from the starting-point of parallel lines, by which method Continental mathematicians have shown that a large number of the less important propositions can be omitted and yet the same results obtained without affecting the precision of the Greek method. The idea of ratio is also early introduced, thus materially simplifying many of Euclid's proofs. At every point the author draws a moral, as it were, by showing the application of the results obtained to practical life. In the short space of sixty pages crown octavo he is enabled to deal—and deal comprehensively—with solid geometry, and to give a number of problems in plane geometry found useful in drawing. The illustrations are very clear. The book deserves to be very generally adopted in schools, technical and otherwise.

Mr. Carroll's book, now in its fifty-second edition, is of a different nature, though it comes under the heading of geometry. It consists of a multitude of examples of how to draw all kinds of shaped figures, especially those generally used in pattern design. The explanations and illustrations are very clear, and the book, from the large sale it has had, evidently proves to be of considerable value. Mr. Carroll bears in mind architectural students and shows how to enlarge drawings of doors and windows to scale, and the applications of practical geometry to drawing of arches. Projection is dealt with simply and very fully, and in an appendix the drawing of the Ionic volute, the drawing of mouldings and the rampant arch, and the application of geometry to plane-surface decoration and wall decoration are dealt with. This is an addition to the present edition. The classification of the book is based on similarity of form rather than identity of principle, which seems most desirable in a book of this nature, serving more for reference and desultory reading than a text-book to be worked through for instruction in the science of geometry. The book serves its purpose admirably.

"Geometry for Technical Students," by E. H. Sprague, A.M.I.C.E. London: Crosby Lockwood & Son, 7, Stationers' Hall Court, Ludgate Hill, E.C., price 8s. nett.

"Practical Geometry for Art Students," by John Carroll. London: Burns & Oates, Ltd., Orchard Street, W., price 1s. 6d.

Waterworks Engineering.

There are several bulky treatises on this subject, but they are a little too elaborate for the engineering student. This is the need which Mr. Middleton has set himself to supply, and he has done his work excellently. In fewer than 200 pages he manages to deal with the subject comprehensively, notwithstanding its vastness, and in a quite adequate manner. His book will serve admirably as an introduction to the larger works on the subject. Such questions as the quality of water, the interpretation of analyses, the quantity, the stability of masonry dams, the flow of water through pipes and the general application of mathematics to the subject have been especially dealt with, owing to their importance to the student, as distinct from the practitioner. The book is beyond a purely theoretical one, for the author has endeavoured to give (and succeeded in giving) a number of practical hints from his own and other engineers' experience. Descriptions of existing works are included. One service which the author has performed is the simplification of

the rules as to the flow of water through pipes, a subject whose intricacy is due to the many theories put forth by mathematicians, often without much experimenting or practical knowledge. Mr. Middleton treats it simply and gathers together the various useful facts ascertained. The book can safely be recommended to all students of water supplies and waterworks engineering.

"Water Supply: A Student's Handbook on the conditions governing the selection of sources and the distribution of water," by Reginald E. Middleton, M.I.C.E., M.I.M.E., F.S.I. London: Charles Griffin & Co., Ltd., Exeter Street, Strand, W.C., price, 8s. 6d. nett.

Laxton's Price Book.

Great care has been exercised in the preparation of the 1904 edition of this standard reference book so as to bring the prices and other information up to date. Special attention has been bestowed on the important branch of structural engineering, which is assuming more and more importance every year. In the section devoted to this, called "Constructional Engineer" (a name not generally adopted and one that is rather absurd), much valuable information is given, the tables on safe distributed loads on British Standard Section rolled steel beams of varying spans, with other properties, being especially valuable, as they have not been given before anywhere.

"Laxton's Price Book for Architects, Builders, Engineers and Contractors, 1904." London: Kelly's Directories, Ltd., 182-184, High Holborn, W.C., price 4s.

Builders' Notes.

The Sheffield Works Department.—At last week's meeting the Council decided to proceed with the election of the Works Construction Committee. The Conservatives did not vote.

Messrs. Hodkin & Jones, Ltd., of Sheffield, manufacturers of artificial stone, marble mosaic, and fireproofing contractors have opened a London office at 63, Finsbury Pavement, E.C.

London Main Drainage Extension.—The London County Council has sanctioned an expenditure of £181,400 for the fourth section of the enlargement of the northern outfall sewer between the Abbey Mills pumping station and Old Ford.

The Patent Victoria Stone Company, Ltd., have declared a dividend of 5 per cent. for the half year ended December 21st last (which, with the interim dividend paid in July last, will make 10 per cent. for the year), together with a bonus of 2½ per cent., leaving a balance of £5,818 to be carried forward.

Rotherhithe Tunnel.—The London County Council have accepted the tender of Messrs. Price & Reeves, amounting to £1,088,485, for the construction of this tunnel under the Thames. The chief engineer's estimate was £1,233,349. The other tenders received were—J. Smith & Co., West Kilbride (Scotland), £958,397; W. Kennedy, London, £987,885; S. Pearson & Son, London, £1,120,978; J. B. Squire & Co., London, £1,168,375; Pethick Brothers, London, £1,187,648; J. Mowlem, London, £1,463,477; J. C. Starkey, Hull, £1,929,051.

English Sanitary Goods for South Africa.

—There is a big boom coming in the supply of sanitary goods for South Africa, and English firms should not miss the opportunity for securing orders. A number of large cities which, under Boer government, possessed no sanitary systems whatever, are carrying out extensive works, and large towns in the older colonies are doing the same. Johannesburg is spending £500,000 on sanitation, Pietermaritzburg £200,000. Capetown (suburbs), Bloemfontein, Durban and Port Elizabeth have also embarked on large schemes. This means that there will shortly be a great demand for earthenware pipes, sanitary appliances and tiles of all kinds.

Enquiries Answered.

The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Dampness in House.

BIRMINGHAM.—X. Y. Z. writes: "About eight years ago I prepared the plans (my first commission) for two houses which were built of gin. outer and 4½ in. inner walls, partly with old bricks. For some considerable time after completion patches of damp appeared on the walls, which I presumed to be sweat from the plaster, but now after eight years I find this condition is in no way improved. The damp patches vary in size from 1 to 20 sq. ft., and are mostly on inside walls (up the staircases and in bedrooms), and one is noticeable even on a chimney-breast. They do not appear in very dry weather, and the tenants keep fires going on the ground floor and have the bedroom windows open. Can you suggest the cause of the trouble and a remedy?"

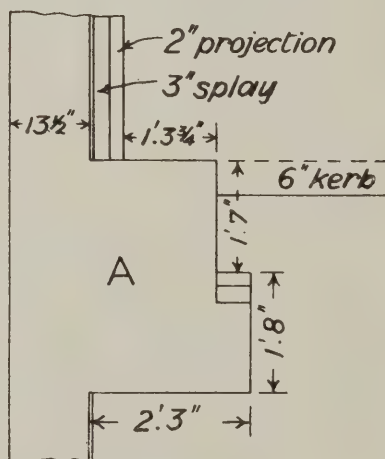
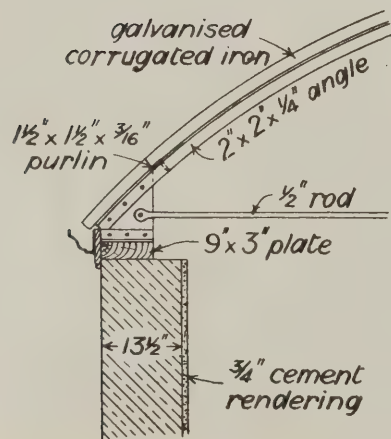
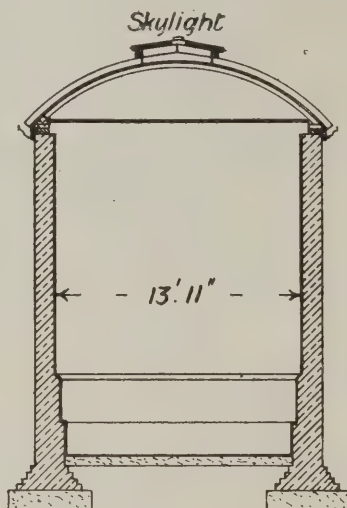
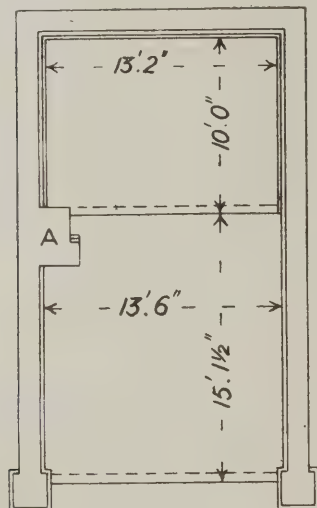
Walls built with old soot-stained or very dirty bricks often show discoloured patches on the plastering and wallpapers. In this instance, however, the trouble apparently does not arise from this cause, as the patches disappear in dry weather, nor does it appear to be due to condensation from insufficient ventilation. In sea-side districts damp patches frequently arise from the use of sea-sand or salt-water in plastering. Should this be the case, we can suggest no cure but the removal of the old plastering and replastering the walls. For very damp walls in exposed positions the following remedy has been found satisfactory, but it is expensive:—Rake out the joints of the brickwork and render with neat Portland cement ½ in. thick, leaving a key on the surface for the next coat. Whilst still green, render again with Portland cement and sand (1 to 3) ½ in. thick. Finish with a floating coat of hair-mortar, and set the face of the plastering in the usual manner. It is possible that the damp-like patches may be caused by some low form of fungoid growth due to the admixture of earth mould, &c., with the sand used for plastering. Walls which are only slightly damp may sometimes be cured, or considerably improved, by the application of two or three coats of petrifying liquid or silicate solution. Petrifying liquids of this description may be obtained from the Granitic Paint Co., Silicate Paint Co. and Messrs. Blundell, Spence & Co. T. E. C.

Ancient Light.

GLOUCESTER.—PEG writes: "We are about to take down a house and erect on the site a three-storey shop and dwelling. There is a little window looking into the yard, and I want to know if we can still retain this ancient light in the building we are about to erect. We may want to take it about 3 ft. further to the back of the new premises; also there would be ordinary 4 in. guttering instead of the roin. eaves, as at present. To the right of the shop doorway the adjoining premises extend on to our own. Could we claim 4½ in. of the wall on the second floor, as shown on the accompanying rough sketch (not reproduced)?"

If it be desired to retain the right of light enjoyed by the little window in yard, the new window which is to replace it must occupy exactly the same position. If it were moved, even a few feet, as suggested, this would be equivalent to abandonment of the present right. Similarly, if the new

eaves are to overhang your neighbour's property as do the present eaves, they must occupy the present position. If it be desired to put up new eaves gutters at a different level, overhanging to a less extent, an arrangement permitting this to be done should be made with your neighbour, in writing, and the agreement embodying this should be properly drawn up by a solicitor and properly stamped. With regard to the neighbour on the other side, whose present wall overhangs yours, the question is almost impossible to answer without knowing how the overlapping came about, and when. In this case also a written agreement should be come to; probably there would be no difficulty in this between two honest and friendly neighbours. G. A. T. M.



DETAILS OF FIVES-COURT.

R.I.B.A. Examination Papers.

GLASGOW.—W. G. W. writes (from an address to which a letter forwarded to him is returned "not found"): "Is it possible to obtain the R.I.B.A. examination papers for several years back without getting the Kalendar for each set of papers, which would be rather expensive? Must the candidate obtain a certain per cent. in each subject or does the aggregate number of marks on the whole examination decide?"

Only the November examination papers for the years 1902-1903 are to be obtained at the Institute in pamphlet form, price 1s. each. All other examination papers can only be obtained in the various R.I.B.A. Kalendars. It is necessary to pass in every subject, and quite rightly so, for nobody can be considered to be qualified whose knowledge of any subject does not reach the moderate standard demanded.

G. A. T. M.

Fives-Court.

LONDON.—T. writes: "What is the most suitable roof for a fives-court, and as it must have a truss what height should bottom of truss be from ground?"

A fives-court is not usually roofed over, but if it must be, a curved galvanized iron roof would be the simplest and cheapest means to adopt. The accompanying sketch shows plan and section of court based upon particulars given in the Badminton series of handbooks. The roof might be of galvanized corrugated iron about 22 gauge, with simple skylight 4ft. wide along top through centre, the whole supported on $2 \times 2 \times \frac{1}{4}$ curved angle bars 6ft. centres, with $1\frac{1}{2} \times 1\frac{1}{2} \times \frac{3}{16}$ angle bar purlins also about 6ft. centres.

HENRY ADAMS.

carry $3\frac{1}{2}$ tons each distributed, they should not be less than 8 by 4 by 25lb. rolled steel joists, but 8 by 5 by 30lb. will be better. The concrete around them can only be looked upon as preserving them from decay, and not adding strength.

HENRY ADAMS.

A Tour in Herefordshire.

CARDIFF.—HERMIT writes: "Having won a travelling studentship, I am going for a three weeks' sketching tour in May. I propose visiting the following towns:—Hereford, Worcester, Pershore, Malvern, Tewkesbury, Deerhurst and Gloucester, in all of which are important Gothic buildings. Kindly give information of other buildings in the district worthy of study. I wish to make a set of measured drawings of one subject only, such as a porch, and have been advised to draw the north porch of Hereford Cathedral. Could you suggest something better?"

You have chosen a list of places so full of architectural interest, and containing such splendid examples for study, that you hardly need seek fresh material elsewhere. However, at Beckford, $4\frac{1}{2}$ miles from Tewkesbury, there is some very interesting Norman work in the church, with some good early carving. Deerhurst, $2\frac{1}{2}$ miles south of Tewkesbury, claims attention. There was a Saxon priory here, of which the tower is left, with portions of south wall and chancel. At Ludlow, the "Feathers Inn" is a quaint half-timbered house, which has a very fine ceiling divided into three compartments by fine ornamental beams. The wall cornice returns round each beam, the centre bay is plain with large centre flower ornament, and the two end compartments are covered with rib and foliage work. At Evesham, near Pershore, there is a very fine group of ecclesiastical buildings composed of the great bell tower of the Abbey and the two parish churches of All Saints and St. Lawrence. The tower of the former is of early date. It is interesting to note that Pugin studied here. There is also a very fine western porch. There is a good wood screen in the chancel of Malvern Priory church, and a good stone reredos in Ludlow church. This makes a very full programme for so short a period as three weeks. In my opinion less should be attempted or much more time allowed. M.

Deal and Spruce.

ABIES writes: "I wish to know the botanical species to which white deal belongs (white pine — Baltic, not the American *P. strobus*). It is generally known to the trade as 'white stuff or deal,' in contradistinction to *Abies alba* or *Excelsa*, i.e., Spruce?"

White Deal, Spruce or Norway Fir are trade names for the *Abies Excelsa*, and Baltic Fir, Baltic Pine, Northern Pine, Scotch Fir, Red Deal and Yellow Deal all refer to the *Pinus Sylvestris*; both these are European trees. Canada Pine, Red Pine or American Deal is the *Pinus Resinosa*, and Yellow Pine, Weymouth Pine or White Pine is the *Pinus strobus*, both American trees.

Cost of Houses.

LONGTON.—E. H. B. writes: "What is the price per ft. cube for a villa residence at Kidderminster (two reception-rooms, three bedrooms and bathroom)? Also for cottages situate at Bangor."

Messrs. Gething & Son, architects and surveyors, of Kidderminster, kindly informs us that such work is now being undertaken from their designs at about 5d. per ft. cube. As regards cottages at Bangor, we would refer you to Kelly's Directory of the Building Trades, from which you can get the names of some builders to whom you can write direct.

Covered Way Supported on Cantilevers.

LONDON.—ALGAR writes: "A covered way is proposed to be constructed against a thick wall, raised above the ground. It will consist of an almost flat roof covered with lead, and the uprights will be 6in. by 6in. timbers, spaced at 12ft. centres, the balusters being 3in. square. The floor will consist of concrete slabs 3in. thick, laid on cantilevers at 5ft. centres, these latter consisting of rolled joists about 7in. deep armoured with concrete, built into the wall 5ft. and projecting 9ft. Will this construction be strong enough?"

It would have been much more satisfactory if a tracing had been submitted than a rough incomplete sketch. The purpose and width of the covered way are not stated; the cantilevers are shown projecting beyond the covered way a distance that might be 3in. or 2ft., no reason being given for the projection. Assuming that the cantilevers may have to

R.I.B.A.

Prof. Frank Clowes on Sewage Treatment.

A MEETING of the Royal Institute of British Architects was held on Monday evening at 9, Conduit Street, W., the chair being occupied by the president, Mr. Aston Webb, R.A.

Prof. Frank Clowes, chemist to the London County Council, read a paper on biological disposal of sewage from isolated buildings.

The paper dealt mainly with the application of the biological method to the sewage from the new colony established at Horsham in the buildings of Christ's Hospital, erected by Messrs. Aston Webb and E. Ingress Bell. The system adopted consists in passing the sewage slowly through a depositing, or so-called "septic," tank, and allowing the outflow from this tank to be dealt with intermittently in coke-beds. The effluent from the tank, after having been treated once in the coke-bed, passes into a running brook, flowing as a matter of convenience over a short stretch of grass-land on its way.

Describing the system of biological treatment and the method of adapting it, the author explained that the general advantages secured by the system are that it affords an inoffensive and non-putrescible effluent, and at the same time largely reduces the amount of sediment or "sludge" from town sewage which has to be disposed of; in the case of domestic sewage it even removes the sludge altogether.

There are two recognized methods which expose the sewage liquid for the action of aerobic bacteria. The "continuous method" provides for the liquid which overflows from the septic tank being continuously sprayed over the coke-beds, through which it constantly trickles and then flows away; whilst the "intermittent method" provides for the coke-bed being filled with the liquid and then drained away after it has remained in the bed for a few hours. Both methods, properly arranged and worked, yield a perfectly satisfactory effluent, and one or other should be chosen according to the conditions under which the sewage is to be purified; where the fall of ground is sufficient the continuous treatment might probably have the preference.

The plant for continuous treatment would be more expensive than that for intermittent, but the cost of working would be less. The extra cost of working the valves in the intermittent system may be reduced where there is a man about the place engaged in other work who can attend to the valves; or the action may be made automatic.

Summarizing the general results obtained, the author stated that the treatment has now been in operation at Horsham for over eighteen months, and that not a hitch has occurred in the working of the plant. The solid faecal matter of the sewage is absolutely disposed of in the septic tank, and no deposit has formed upon the bottom of the tank. The fear expressed that this tank might become offensive has been proved groundless, since the ventilators in the roof of the tank and the open manholes emit no offensive smell and the smell of the effluent itself is slight and only noticeable in the immediate vicinity of the tank. The final effluent liquid from the coke-bed is usually slightly turbid but is free from any offensive odour; it possesses only the smell of freshly-turned garden mould, and this is the odour usually emitted from wholesome effluents.

An effluent of the character of that at Horsham actually improves the condition of the water of a brook which has been fouled by sewage and cesspool discharges. The experience obtained in the construction and working of the plant in question has given

assurance that it is suitable to deal with the sewage derived from any isolated building without giving offence. Under proper management, the sewage effluent which it discharges is innocuous to fish, and can never become offensive when it is discharged into a water-course.

The author gave details of the construction of the plant and the method of using it. The sewage flows by gravitation into a small receiving chamber and passes through a coarse screen into the septic tank. The tank is constructed in duplicate in case of accident or necessity of repair, each part being capable of retaining a twenty-four hours' flow of sewage. The tanks are covered in and provided with tall vertical ventilating shafts similar to those employed for the ventilation of sewers. The tanks were formed by excavating the soil, and were then built in brick and rendered inside with cement. Both the inlets and the outlets of the tanks consist of elbow pipes, the ends of which are beneath the surface of the liquid within. The solid faecal matter rises to the surface of the liquid, and the arrangement of the elbow pipes not only ensures that this matter shall remain in the tank during its dissipation as gas and liquid, but also that it shall not be disturbed meanwhile by the flow of the liquid.

The effluent passes from the septic tank by an exit and flows along an open channel on its way to the coke-beds. This channel was constructed in a succession of steps, so that the liquid, by falling over weir-walls, might be freed from much of its dissolved gas and might become aerated. Aeration has since been more fully secured by letting the effluent fall through perforated trays before passing over the weirs.

From the culvert the liquid flows into a tank filled with small graded hard coke. The liquid is distributed over the coke surface by flowing along branched "grips," which are excavated in the surface of the coke. The grips are lined with fine coke, which serves to filter off the coarser particles and to prevent them from getting into the bed. This fine coke is raked off at intervals and replaced by similar fresh material. As soon as the coke-bed is full to the upper surface of the coke, the flowing liquid is diverted into another similar bed. The bed is then allowed to stand full for two hours, after which the liquid contents are allowed to flow away through drainage arrangements provided on the floor of the tank. This liquid constitutes the purified sewage effluent.

The tanks for containing the coke are constructed in a similar way to the septic tank, but are not covered in. They have square drainage channels provided in their floors, which are covered with perforated iron plates. Six of these coke-beds are provided, and they are used in succession. Three of them are filled and emptied each day, the liquid remaining in the bed for two hours and the bed being allowed to stand with air in the interspaces of the coke after its liquid contents have been discharged. Two of the remaining beds receive the effluent flowing continuously through them from 5.30 p.m. to 6.30 a.m., a period during which the sewage is scarcely foul and comparatively little purification is necessary. This flow is provided in order to maintain the proper bacterial condition of the coke while the bed is not doing duty.

It is found that the amount of purification produced by a new plant increases for a considerable period, and that, so far from the tanks requiring renewal or cleansing, they become increasingly efficient as their age increases if they are worked with regularity and are left undisturbed.

This "natural" or "biological" process is identical with that which occurs in the treatment of sewage on the land in sewage farms, but the biological plant causes no offence and requires less space and is more satis-

factorily under control than the sewage farm. It compares favourably with the chemical processes of treatment, which can never effect economically a purification equal in degree to that secured by biological action, and which produce a much larger amount of sediment or "sludge."

A discussion followed in which Dr. Fowler (of Manchester), Mr. Griffiths, Mr. Willis (secretary of the Royal Commission on Sewage), Dr. Armstrong, Mr. Max Clarke, Mr. Lishman and Mr. Aston Webb took part.

Dr. Fowler said that by modern methods it was possible to produce an effluent of any degree of purity, this being only a matter of cost, and he mentioned an installation near St. Petersburg, at a place where the Czar spent his summer holidays, in which the treatment was completed by disinfection by ozone. Installations for country-houses and comparatively small places might be made efficient without any very serious expense by the addition of a few pounds, which might almost double the factor of safety. No doubt it was possible to over-septicize sewage, with the result that putrefaction followed and sulphuretted hydrogen was given off in offensive quantity, and for this reason the size of the septic tank became limited and probably the filter bed as well. Dr. Fowler emphasized the advantage of having a good margin, which might easily be secured in a small installation, though it was a different matter where, as in dealing with the sewage of a city like Manchester, the utmost had to be got from every cubic yard. Quite as efficient results could be obtained by simple distribution as with complicated mechanism. He referred to the bed employed by Professor Dunbar, of Hamburg, which consisted of about 6 in. or 9 in. of fine material on top with coarse material underneath. The former had an important physical action in absorption, which should not be overlooked. Regarding the disposal of sewage from isolation hospitals, Dr. Fowler said that the mere passing through the system was useless; the sewage should first be sterilized by chloride of lime, this being changed to chlorate by the action. Dr. Fowler cited a filter bed with sand on top and coarse material below which had been in use for thirteen years and gave complete satisfaction. At Manchester the cost of occasionally scraping the beds was 3s. per million gallons. The cost of their experimental installation had been £600. Speaking of automatic gear, he said that if it saved all labour it was very useful, though the advantage was lessened as men were required for other purposes. Dr. Fowler mentioned the growth that took place in pipes, citing the case of a 3 in. pipe which had become completely blocked, and urged the necessity of having every part of the apparatus simple.

Replying to questions, Prof. Clowes said it was unwise to allow the sewage to remain in the tank for more than twenty-four hours. As to the filling material, nothing was so efficient as coke, though ballast, hard boiler clinker, broken bricks and saggars were good. Most of the action of the beds was accomplished within the first half an hour or so, but they allowed the sewage to remain for about two hours. Frost did not affect the action as it was only on the surface, the temperature of the London sewage, for example, never being less than 66 degs. Fahr.

The president announced that at the next meeting, to be held on February 29th, it would be proposed that after December, 1906, every candidate for Fellowship should qualify as an Associate, except in special cases, and that in the meantime the doors of the Fellowship should be opened wider, so that no reputable practising architect desiring to join the Institute should be debarred from doing so.

LONDON BUILDING ACTS AMENDMENT.

Recommendations by the R.I.B.A.

THE Council of the Royal Institute of British Architects having been requested by the London County Council to submit suggestions as to the amending of the London Building Act, 1894, in view of the Amendment Bill they propose to introduce into Parliament this year, at first referred the matter to the Practice Standing Committee. It appeared afterwards, however, that the suggestions of the Art and Science Standing Committees on matters fully within their special spheres of interest would be of great value, and references were accordingly made to these two committees. The three committees sent in to the Council their respective reports, and the task of collating and co-ordinating these was referred to a special committee consisting of the chairmen of the Art, Practice and Science Committees* and two members of Council. The following recommendations and amendments, the result of their labours, have now been submitted to the London County Council:—

General Principles.

1. The Act should be re-edited in order that better classification of the various sections may be obtained, and so as to render it more intelligible to those using it, who, it must be remembered, are often inexperienced in legal phraseology.
2. In the administration of the Act more discretionary power should be given to the London County Council, the superintending architect, and the district surveyors to meet special cases arising.
3. The district surveyors should be practising architects. It is recommended that no one should be appointed who has not been in practice as an architect for at least seven years, or as an assistant to a practising architect for at least ten years.
4. In all cases where discretionary power is given to the L.C.C., the superintending architect and district surveyors, there should be power to appeal to the Tribunal of Appeal, and parties should be able to appear either personally or by counsel. Powers should be taken to enlarge the Tribunal, if necessary, so as to enable decisions to be given with as little delay as possible. Differences arising under Parts IX. and X., and also appeals from awards under Part VIII., and any other technical points arising, should also be referred to the Tribunal.
5. Greater publicity should be given to proposed new by-laws, and objections to them should be heard before the Tribunal of Appeal, who should report to the Secretary of State before the by-laws are confirmed.
6. The recommendations of the Royal Institute of British Architects relating to fire protection and means of escape, already before the L.C.C. in connection with the Bill withdrawn in the earlier part of last year, should be considered in conjunction with the following recommendations except as herein amended.
7. The schedule of fire-resisting materials wants reconsideration when the main body of the Act has assumed more definite shape.
8. Suggested sections relating to pier construction are submitted as Appendix A. to these recommendations.
9. Suggested sections relating to skeleton frame buildings are submitted as Appendix B. It is suggested that these sections should be treated as by-laws rather than be inserted in the Act, or if embodied in the Act power should be taken to vary them as experience proves to be necessary; see fifth item, section 164 (1) of existing Act.
10. Suggestions relating to supports under superstructures are submitted as Appendix C.

RECOMMENDATIONS UPON THE PRESENT ACT, IN DETAIL

PARTS I.—XI.

SECTION 5.—(1) and (2) The definitions of "street" and "way" are too comprehensive. A court, alley or passage not dedicated to the public, and not a thoroughfare, should be exempt. (20) Add at end of section: "and shall also apply to the structure or wall or portion of same upon which a party-wall rests in the cases where such party-wall does not extend to the ground or foundation level as a party-wall." (25) Substitute for the present wording after the words "to be used" as follows: "to a greater extent than half the cubical contents for human habitation." Additional definition: The term "working classes" should be defined.

SECTION 7.—Add at end of section: "Provided that if the said street be in conformity with this Act no conditions limiting the time in which such street shall be made laid out or formed shall be attached to such sanction."

SECTION 8.—Line 4: After word "street" insert "and throws the same open for public use"; line 7: delete from "abutting on" to "formed," and substitute "or fronting on such street made or intended to be made laid out or formed thereafter."

SECTION 9.—(4) last line: After "street" add "already." Add at end of section: "or to be formed and laid out for carriage traffic at the same time as the said street. Direct communication shall be deemed to be afforded between two streets by a street joining them either at their ends or at any point of their length forming a junction at any angle."

SECTION 13.—(1) It is considered that private property should not be taken under this section unless compensation be given. (5) The proviso as to workmen's dwellings should be omitted, as it prevents the best sites for this class being used.

SECTION 19.—Substitute for this section the following: "Whenever any difference arises under Part II. of this Act the interested parties may appeal to the Tribunal of Appeal."

SECTION 21.—Omit as being obsolete.

SECTION 22.—(1) Add at end of section: "In defining the said general line in the case of a new building at the corner of two streets he shall have regard to the general line of frontage of the principal street only."

SECTION 39.—Omit all words after "to be used," and substitute "to a greater extent than half the cubical contents as offices counting houses or business premises other than buildings of the warehouse class."

SECTION 41.—(1) (i.) Instead of words "open space" read "space open to the sky"; (ii.) substitute for this clause the following: "No building shall in any part thereof be nearer to the rear boundary of the curtilage thereof than 10ft. provided that in the case of any building upon a corner site the said area may be arranged in a convenient position to the satisfaction of the Superintending Architect and not necessarily extend the entire width of the rear of such building."

SECTION 47.—Insert before the last paragraph of this section the following: "Where any building is erected or intended to be erected on a corner plot so as to abut upon more than one street the height of the building shall (unless the Council otherwise consent) be regulated by the wider of such streets so far as it abuts or will abut upon such wider street and also so far as it abuts or will abut upon the narrower of such streets to a distance of 40ft. from the building frontage in such wider street. The height of the remaining portion of the frontage to the narrower street shall be limited by the section regulating the height of buildings in such street except that it shall be lawful in such case where the buildings previously existing on such remaining portion were of a greater height to rebuild them to the same height or heights."

SECTION 49.—In order to conform with section 47 (as amended) delete the second paragraph commencing "where" and ending "existing height."

SECTION 51.—Delete.

SECTION 53.—Add at end of section: "Except as hereinafter provided under the section relating to steel construction."

SECTION 54.—Omit the words in last paragraph: "With respect to the area of recesses and openings."

SECTION 56.—(1) Line 1: Omit word "whether of wood or metal." Add at end of section: "Provided that any bressummer of metal may be supported solely on a sufficient metal stanchion embedded in the party or external wall so that such stanchion shall not be nearer to the centre of a party-wall than 4in. and in any such case no pier in addition to the party-wall shall be required." (2) Delete. (4) Delete and substitute the following: "Every bressummer bearing upon a party-wall shall be borne by a temple of stone or iron or vitrified stoneware or a corbel of stone or iron tailed through at least half the thickness of the wall and of the full breadth of the bressummer."

SECTION 58.—At end: Insert after the word "length" the words "and height."

SECTION 59.—(1) Line 1: After "party-wall" insert "except as hereinafter provided"; line 4: delete the words "of the highest building adjoining thereto." Add at end of sub-section: "In a building other than of the warehouse class the roof whereof is wholly constructed of fire-resisting materials the party-wall shall be carried up of a thickness of at least 8in. to the underside of such roof surface"; (2) lines 4 and 7: For "four" read "three."

SECTION 61.—(1) Line 1: For "and every turret, &c." read "and of every turret, &c."; (3) line 3: Alter the word "horizon" add the words "unless such roof be constructed of fire-resisting materials" add at end of section the words "or structures giving access to roofs"; (4) amendments similar to those in sub-section 3: line 3: for "seventy-five degrees" read "eighty-five degrees."

SECTION 63.—Dealt with in fire-protection recommendations.

SECTION 64.—(1) Line 2: After "erected" insert "above lowest floor." (9) Add at end of sub-section: "Provided always that where a ventilating flue is carried up with a smoke flue they may be separated by a properly constructed iron wythe." (10) For "party-wall" read "party and internal walls." (10) For "mantel" read "lintel or arch." Add at end of sub-section: "except where fireplaces in such internal walls are back to back." (13) Add at end of sub-section: "No chimney flue shall be nearer than 2in. to the centre line of an party-wall. No iron or steel joist shall be built into any flue." (15) line 4: For "eighteen" read "twelve." (18) line 2: Omit word "new."

SECTION 65.—(4) Insert after the words "heated air" the words "other than air heated by hot water at low pressure."

SECTION 67.—Insert after the word "floor" the words "or roof."

SECTION 70.—(1) (a) For "ft. 6in." read "8ft."; (d) line 1: Omit the word "basement" and add after the word "room" the words "next the ground"; (e) In second paragraph, for "no" read "four and a half."

SECTION 73.—(1) Line 1: For "fireproof" read "fire-resisting." (2) Add to end of sub-section "except in streets 60ft. wide and over where cornices may be projected not more than 3ft. 6in. over the public way." (5) (a) Omit entirely; alter the end paragraph of sub-section commencing "Bay windows" as follows: Add after the word "erected" the words "beyond the general line of frontage." (6) In first paragraph after the word "windows" insert "balconies"; (a) For whole proviso read: "The face of such projections shall not extend more than 3ft. from the face of the front wall of the building or more than 12in. over the public way exclusive of the cornices mouldings or other architectural features of such projections"; (d) after the word "together" add "except in the case of balconies"; (e) delete all words after "District Surveyor."

SECTION 73.—(6) Last paragraph of sub-section commencing "oriel windows" to be altered as follows:

"Oriel windows turrets or balconies to which the foregoing rules do not apply." &c. Add definition: "An oriel window is any projecting window corbelled out from an external wall or the masonry of which does not extend downwards to the level of the ground."

SECTION 74.—Substitute for the whole section the following: "(1) Every building shall be separated either by an external wall or by a party wall or other party structure from the adjoining building (if any) and from each of the adjoining buildings (if more than one) and every such party structure shall be constructed of incombustible materials to the satisfaction of the district surveyor. (2) Separate sets of chambers or offices or rooms tenanted or constructed or adapted to be tenanted by different persons shall if contained in a building exceeding 40ft. in height and ten squares in area taken at the level of the first floor be separated so far as they adjoin horizontally by floors or arches constructed of fire-resisting material and if such sets of chambers or offices or rooms are contained in a building exceeding twenty-five squares in area taken at the level of the first floor all the floors throughout and the principal staircases and enclosures of same shall be constructed of fire-resisting material. (3) A district surveyor shall not be entitled to charge for the inspection of each such set of chambers or offices or rooms as a separate building. (4) No building containing separate sets of chambers or offices or rooms tenanted or constructed or adapted to be tenanted by different persons shall without the consent in writing of the Council extend to more than fifty squares in area unless the floors be constructed throughout of incombustible materials not less than 6in. thick and the principal stairs and the supporting enclosures thereof be of incombustible materials. (5) In every building exceeding ten squares in area used in part for purposes of trade or manufacture and in part as a dwelling-house the part used for the purposes of trade or manufacture shall be separated from the part used as a dwelling-house vertically by walls or partitions and horizontally by floors such partitions and floors to be constructed of fire-resisting materials other than wood and all passages staircases and other means of approach from the front door provided that such front door be set back not more than 5ft. from the front of the building to the part used as a dwelling-house shall be enclosed with and constructed throughout of fire-resisting materials other than wood to the satisfaction of the district surveyor. The part used for purposes of trade or manufacture shall (if extending to more than 250,000 cub. ft.) be subject to the provisions of the Act of 1894 relating to the cubical extent of buildings of the warehouse class. (6) All passages and staircases and other means of approach referred to in the last preceding sub-section of this section shall be not less than 3ft. wide. (7) A staircase enclosed and constructed as aforesaid shall be provided in every such building as is referred to in the two last preceding sub-sections of this section which has any storey above the ground storey and where any space intervenes between the termination on the ground floor of such staircase and the street there shall be provided from the termination of such staircase to the street a passage enclosure and constructed as aforesaid unless means of escape to the satisfaction of the Council are provided from the side rear roof of the building. (8) If the area of such building exceeds fifty squares an additional staircase and (if the circumstances so require) a passage enclosed and constructed as aforesaid shall (unless the Council otherwise permit) be provided in respect of every fifty squares or part of fifty squares beyond the first fifty squares. (9) It shall be lawful to construct in the walls of such staircase and passages such doorways as are necessary for communicating between the different parts of the building and all internal doorways leading from the portion of the building used for trade or manufacture to such staircase and passages shall be fitted with self closing doors of fire-resisting material hung in frames of fire-resisting material. (10) Nothing in this section contained shall (except for the purpose of a party structure separating buildings) prevent the use of solid wood-joists placed close together of wooden joists in conjunction with pugging of a fire-resisting material of a thickness of not less than 5in. for the construction of fire-resisting floors. (11) Any building structure or work which has been commenced before the Act or which is to be carried out under any contract entered into before the passing of this Act shall not be subject to the preceding provisions of this section but may and shall be completed subject to and in accordance with the provisions of the Acts relating thereto as in force immediately previous to the passing of this Act."

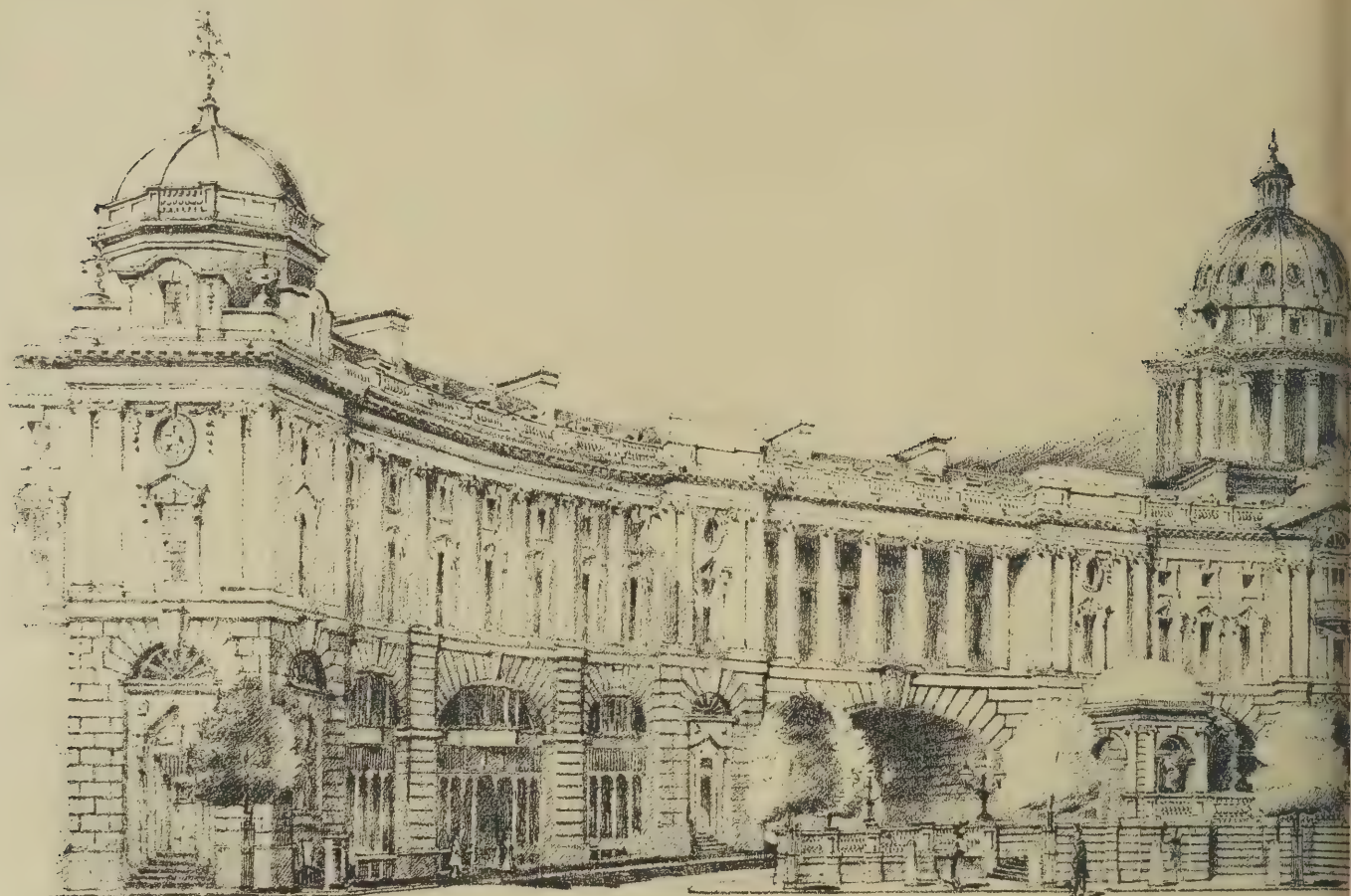
SECTION 76.—(1) Delete.

SECTION 77.—Delete and substitute: "Buildings shall not be united except under the following conditions: (1) If when so united and considered as one building only they would not be in conformity with this Act. (2) An opening shall not be made in any party-wall or two external walls dividing buildings which if taken together would extend to more than 250,000 cub. except under the following conditions:—(a) Such opening shall not exceed in width 7ft., or in height 8ft., except with the consent of the Council, and such opening openings taken together shall not exceed one-half the length of such party-wall on each floor of the building in which they occur. (b) Such opening shall have iron floor jambs and head formed of brick stone or iron to be closed by two wrought-iron doors each 4in. thick the panel at a distance from each other of the full thickness of the wall fitted to rebated frames without work of any kind or by wrought-iron sliding doors shutters properly constructed and provided with bolts other fastenings fitted into grooved or rebated iron frame. (c) Such other fire-resisting doors as may be approved from time to time by the Council. (d) If the thickness of the wall be not less than 24in. or the doors be placed at a distance from each other of not less than 24in. such opening may be 9ft. 6in. in height or such other great height as may be approved by the Council. (e) If the purpose of this section buildings which adjoin may be united in whole or in part if those portions in separate occupations are separated by a floor or floors or horizontal divisions of fire-resisting materials not less than 12in. thick."

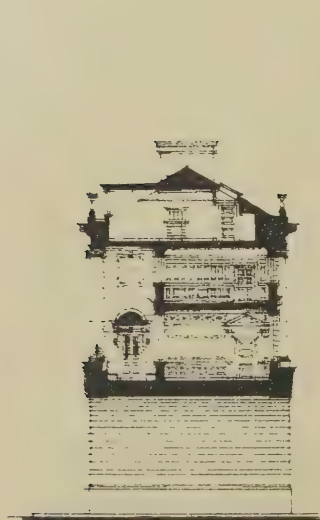
SECTION 78.—Line 6: For "Tribunal of Appeal and so far, &c." read "tribunal of appeal. For the purpose of this section the district surveyor or in the event of disagreement the Tribunal of Appeal may in his or their

* Mr. Macvicar Anderson, Mr. J. Douglass Mathews and Mr. Lewis Solomon.

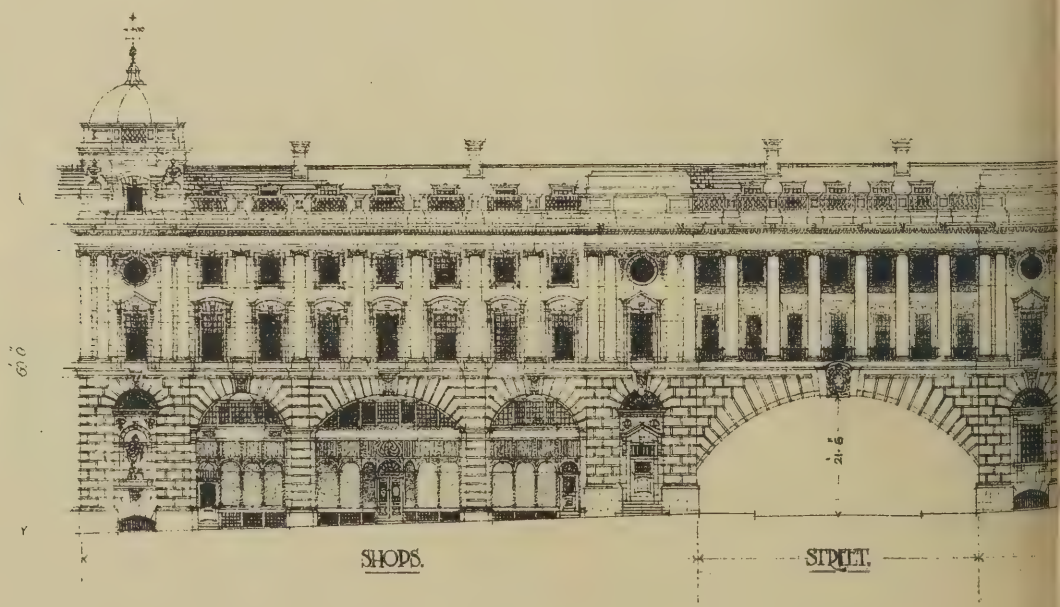
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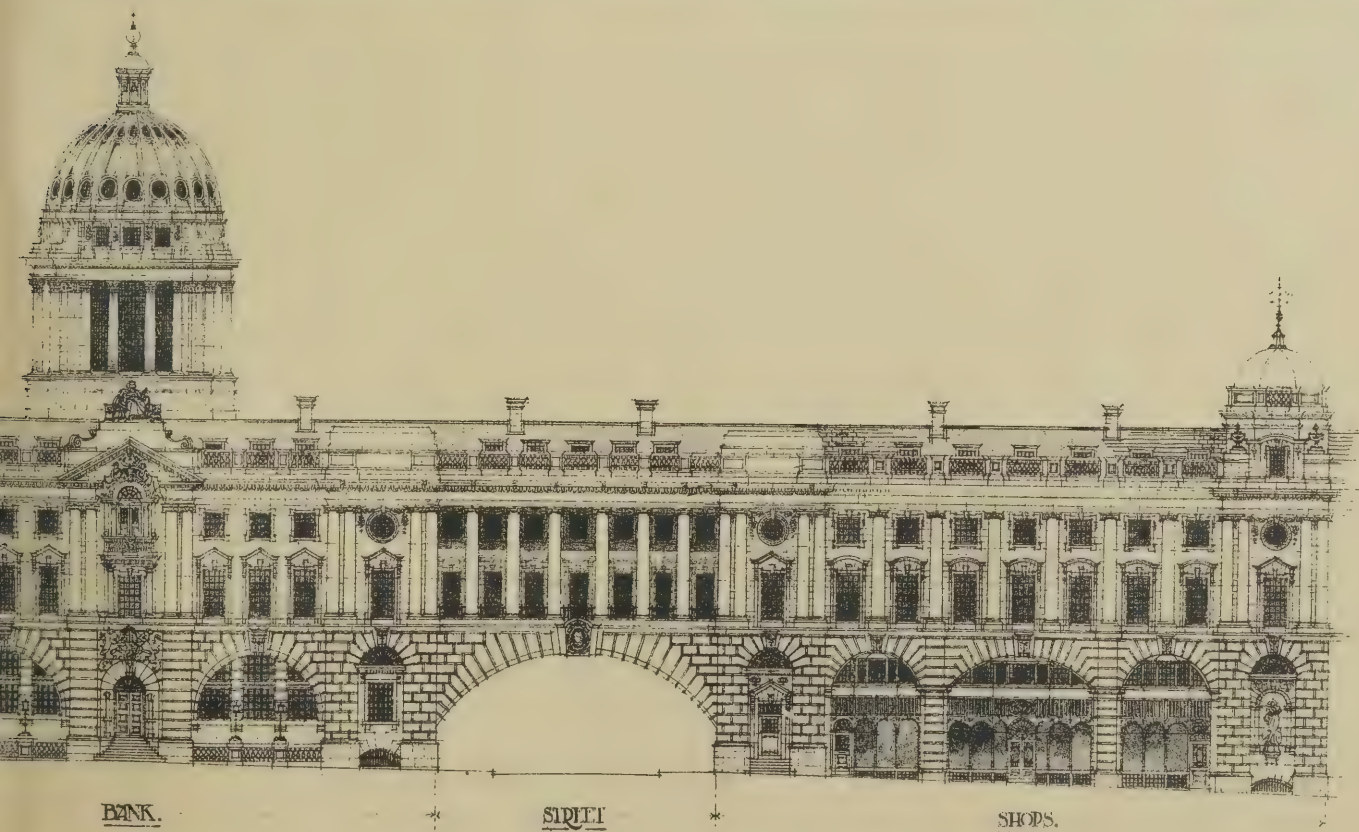
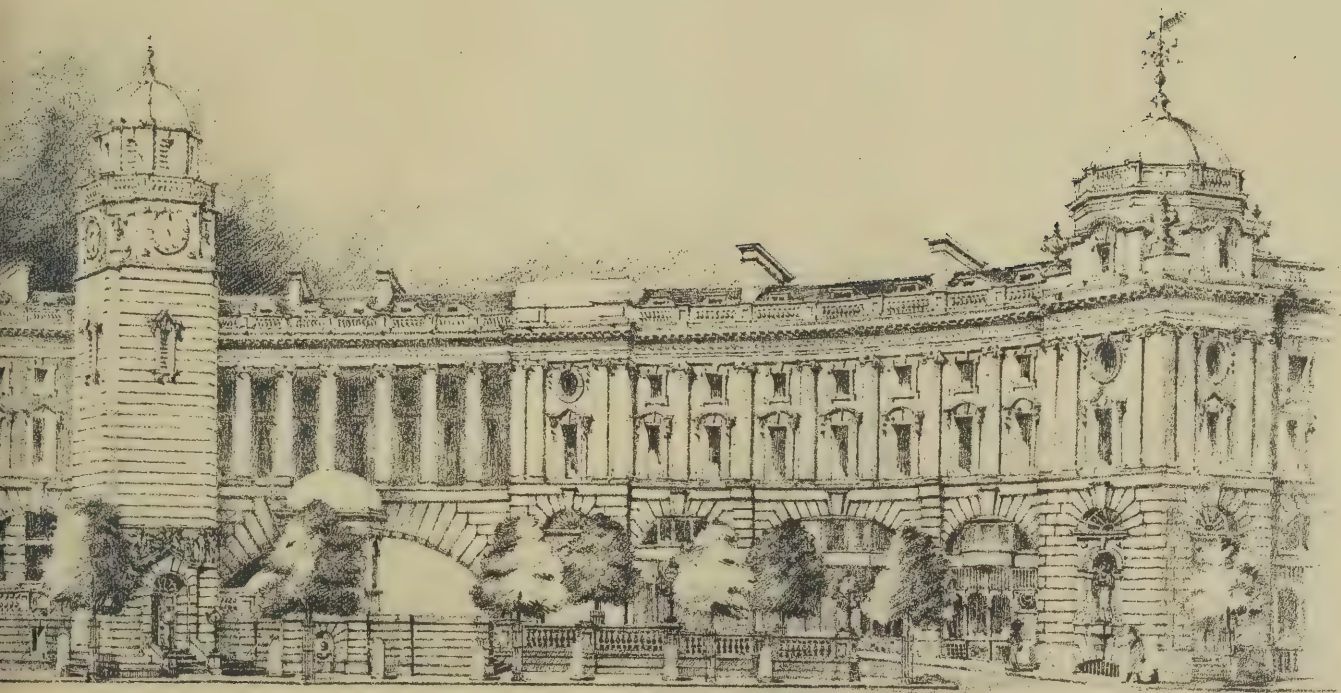


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SECTION.
(THRO ARCHWAY OVER STREET)





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discretion vary or depart from any of the enactments in this Act as to the construction of buildings that may appear to him or them necessary or desirable to suit the special circumstances of the case of any public building or any one or more of a series of public buildings or their accessories or connections within one curtilage and save so far," &c., &c.

SECTION 80.—The width of passage to apply to doorway, the clear opening between the doors when open to be the full width of the passage less double the thickness of the door.

SECTION 84.—The Royal Institute recommends that it should be defined what portion, if any, is now administered by the Council.

SECTION 88.—(6) Lines 1 and 3: After "party structure" add "or external wall."

SECTION 90.—(1) Line 7: Add after the word "any" the words "external or." Add at end of sub-section: "Such notice shall not be deemed to be invalid if on further investigation variations in the work proposed to be done are found to be necessary by the surveyors to be appointed as hereinafter provided." (4) For "six months" read "twelve months."

SECTION 91.—(10) For "a Secretary of State" read "the President for the time being of the Royal Institute of British Architects."

SECTION 92.—Add at end of section: "The duly appointed surveyors shall have power at all reasonable times to enter the premises of the building owners and adjoining owners for the purpose of examining the same or inspecting the works authorised by this part of the Act."

SECTION 93.—(1) Line 1: "For two months" read "one month"; line 4: For "shall" read "may"; (3) line 2: Omit word "inconvenience." Add new sub-section: "(5) Such notice need not be served in respect of any wall as to which a Party Structure Notice is necessary to be served under this Act."

SECTION 95.—(2) (d) Line 1: For "floor" read "flue"; (f) in third line of second paragraph of sub-section strike out "as aforesaid." As it stands only buildings erected after 1894 are affected.

SECTION 96.—Line 1: For "one month" read "six months."

PART XII.

It is believed that this part of the Act requires revision to bring it up to date.

PART XIV.

SECTION 164.—(4) The list should include the "Times," and at least four other London daily or weekly papers.

PART XV.

SECTION 175.—See under "General Principles."

SECTION 190.—In accordance with previous suggestions this clause to be subject to the Tribunal of Appeal.

SECTION 198.—This clause should be more explicit.

SECTION 216.—It is recommended that matter included in by-laws made since the Act was passed should be as far as possible incorporated in the body of the new Act.

FIRST SCHEDULE.

PRELIMINARY.

SECTION 5.—Omit whole and substitute: "Hollow walls may be constructed provided the aggregate thickness of the material shall equal the thickness provided under this schedule and that the two sections of the wall shall be properly bonded together with approved ties not less than one tie to every 3 super. ft., and that the inner section of the wall be in no case less than 8 in. in thickness unless the two sections of the wall be built in cement-mortar. Walls may also be built in two thicknesses provided that they be built in cement and the space between them be not less than 4 in. wide and be filled with an approved bituminous composition."

SECTION 7.—Line 3: After "full height or not" omit the rest of the section.

SECTION 8.—Add at end of section the words: "Where a wall without return walls is divided into portions of different heights the thickness of each of such portions shall be governed by the height of such portion and by the length of the entire wall."

PROPOSED NEW SECTIONS.

"SECTION 12.—If any external or party-wall measured from centre to centre is not more than 26ft. distant from any other external or party-wall to which it is tied by the beams of any floor or floors other than the ground floor or the floor of any storey formed in the roof the length of such wall is not to be taken into consideration in deciding the thickness."

"SECTION 13.—Where buttresses or piers are built with external walls of thicknesses in excess of those required by the Act the walls between such piers or buttresses may be of less thickness than required for walls without such piers or buttresses at the discretion of the district surveyor but provided that no such wall shall be of less thickness than 14 in." (N.B.—Vide Appendix A.)

PART I.

SECTION 1.—In second paragraph omit words "and does not comprise more than two storeys."

PART II.

SECTION 1.—Delete.

SECTION 2.—Omit words "exceeds 25ft. but."

MISCELLANEOUS.

SECTION 1.—Line 7: For "one-half" read "two-thirds."

STEEL CONSTRUCTION.

Provisions to be made for this by by-laws which should be modelled on the most recent American Building Acts, such as those of New York and Philadelphia; but suggestions (Appendix B) are offered. Should the London County Council think fit to sanction the suggestion as to skeleton frame buildings, the district surveyor's fee for such special calculation should be upon a sufficient scale to ensure the work being properly done.

SECOND SCHEDULE.

PART II.

SECTION (2).—Before word "granite" insert "cement concrete."

NOTE.—A number of new fire-resisting materials are now available, and more are likely to be introduced; the

materials specified in the Schedule should therefore be enlarged and greater facilities given for their use.

SECTION (7).—Delete and substitute: "Floors (below the floor-boards) formed of wood joists filled in with concrete not less than 5 in. thick composed of broken brick stone chippings ballast pumice or coke-breeze mixed with lime cement or calcined gypsum provided a fillet is secured to the side of the joists in the middle of the concrete or otherwise to the satisfaction of the district surveyor."

APPENDIX A.

SUGGESTED SECTIONS RELATING TO PIER CONSTRUCTION OF BUILDINGS.

Notwithstanding anything contained in the principal Act requiring buildings to be enclosed with walls of the thickness therein defined, it shall be lawful to erect buildings of pier construction subject to the following provisions:—

1. The load of all floors and roofs shall be concentrated at points vertically over each other on the bearing walls, at which points piers carried up to the roof and continuous throughout their height shall be erected; and there shall be extending from pier to pier and properly bonded therewith a curtain wall enclosing the building.

2. No curtain wall shall be of less thickness than 8 in. for the topmost 20ft. of its height, nor less than 13 in. in thickness for the remainder of its height below such topmost 20ft., provided that window backs may in all cases be 8 in. in thickness.

3. The collective width of the piers on any wall shall amount to at least one-fourth of the total length of the wall and piers taken together; and no pier shall be less than 17 in. in width.

4. The thickness of the pier shall be in addition to the thickness of the curtain wall and shall be as follows:—
(a) The thickness at the top and for 20ft. below the top shall be 8 in., and the intermediate parts of the pier between the base and 16ft. from the top shall be of not less thickness than would be the case if the pier were built solid throughout the space between straight lines drawn joining the thickness of the base to the thickness at 20ft. from the top. (b) The thickness at the base shall be:—

If pier does not exceed 30ft. in height, not less than 4 in.	40	13
" " " 50	"	17½
" " " 60	"	21½
" " " 70	"	26
" " " 80	"	31

with an additional 4 in. for every additional 10ft. or part of 10ft. in height beyond 80ft.

5. Openings may be made in the curtain wall in accordance with section 54 of the principal Act.

6. Any of the piers may, with the sanction of the district surveyor, be discontinued for any portion of its height, provided that the remaining piers be proportionately increased on plan by additional brickwork or stonework, or be supplemented by iron or steel stanchions or columns to the satisfaction of the district surveyor, and that any brummer employed shall be to the satisfaction of the district surveyor.

7. Where the piers project on both sides, of the wall the total thickness of both projections shall be not less than the thickness hereinbefore specified for the piers projecting on one side only.

8. Any non-bearing wall shall be of sufficient thickness if constructed with piers and curtain walls as hereinbefore provided for bearing walls, or if of 4 in. less in thickness than provided in the first schedule of the principal Act; provided that no wall shall be less than 8 in. in thickness at any part, and that not more than two storeys shall be comprised within a wall of 8 in. in thickness.

APPENDIX B.

SUGGESTIONS FOR THE REGULATION OF SKELETON BUILDINGS.

Notwithstanding anything contained in the principal Act requiring buildings to be enclosed with walls of the thicknesses therein defined it shall be lawful to erect buildings of iron or steel skeleton construction subject to the following provisions:—

1. The skeleton framing in any wall shall be capable of safely sustaining, independently of any brickwork, the whole weight bearing upon such wall, including the weight of such wall and the due proportion of any floors and roofs bearing thereon, together with the live load on such floors and roofs.

2. The pillars supporting all iron or steel girders that carry walls or fire-resisting floors or roofs shall be of iron or steel, and shall be completely enclosed and protected from the action of fire by a casing of brickwork or concrete or other material approved by the district surveyor. Such casing shall, on the surfaces towards the exterior of the building, be at least 8 in. thick, and on all other surfaces at least 4 in. thick, the whole being properly bonded with the enclosing walls of the building. The term pillar shall include all columns and stanchions or an assemblage of such columns or stanchions properly riveted or bolted together.

3. The iron and steel girders (excepting in floors and staircases) shall be similarly cased with not less than 4 in. thick properly tied and bonded to the remaining work; but the flanges of the girders and the plates and angles connected therewith may approach within 2 in. of the surface of the casing.

4. Girders to support the enclosing walls shall be fixed at or within 4ft. of the floor line of each storey.

5. No enclosing wall of the building shall be of less thickness than 8 in. for the topmost 20ft. of its height, nor less than 13 in. in thickness for the remainder of its height below such topmost 20ft., provided that window backs may, in all cases, be 8 in. in thickness.

6. All brickwork and concrete shall be executed in cement and shall be bedded close up to the iron or steel without cavity between, and all joints shall be made full and solid. Nothing in this section shall prevent the use of stone as an external facing for buildings, provided that all work faced with stone shall be 4 in. thicker than hereinbefore provided.

7.—(a) No steel or wrought-iron pillar shall in any part be less than 4 in. thick, nor shall any such pillar have an unsupported length of more than 40 times its least lateral dimensions, nor more than 160 times its least radius of gyration. (b) The ends of all such pillars shall be faced

to a true surface at right angles to the axes. (c) All joints in such pillars shall be close-butted with cover-plates properly riveted, and, except where unavoidable, no joint shall be made except at or near the level of a girder. (d) The foot of all such pillars shall have a proper base-plate riveted thereto, with sufficient gusset pieces to properly distribute the load on the foundations. (e) Where any such pillars are built up hollow, the cavities shall either be filled up with cement-concrete or be covered in at both ends to exclude the air.

8.—(a) In any cast-iron pillar the metal shall not be in any part of less thickness than ¼ in. nor less than one-twelfth of the least lateral dimension. Nor shall such pillar have an unsupported length of more than 20 times its least lateral dimension, nor more than 80 times its least radius of gyration. (b) The caps and bases of such pillars shall be in one piece with the columns, or be connected thereto with a properly turned and bored joint sufficiently fixed. (c) All such pillars shall be turned or planed top and bottom to a true face at right angles to the axes. (d) All joints in such pillars shall be at or near the level of a floor, and shall be fixed and made with not less than four bolts at least ¼ in. in diameter. (d) The foot of all such pillars shall have such area as may be necessary to properly distribute the load on the foundations.

9. All girders that carry walls or floors or roofs shall be of wrought-iron or mild steel.

10.—(a) All floors and all staircases (together with their enclosing walls) shall be constructed throughout of fire-resisting materials and be carried upon supports of fire-resisting materials. (b) All iron and steel carrying loads used in the construction of any floor or staircase shall be protected from the action of fire by being encased to the satisfaction of the district surveyor in concrete, brickwork, terra-cotta or metal lathing and plaster or cement without any wood fittings.

11. All structural metalwork shall be cleaned of all scale dust and rust and be thoroughly coated with one coat of boiled oil or paint or other approved material before erection, and after erection shall receive at least one additional coat.

12.—(a) The dead loads of all buildings shall consist of the actual weight of walls, floors, roof, partitions, and all permanent construction. (b) The live load shall consist of all loads other than dead loads. (c) For the purpose of calculating the loads on pillars in buildings the live load on floors shall be estimated as equivalent to the following dead load:—For dwelling-houses, hotels, hospitals, lodging-houses and similar buildings, ½ cwt. per super. ft.; for office buildings, ¾ cwt. per super. ft.; for places of public assembly, workshops and retail shops and similar buildings, 1 cwt. per super. ft.; for buildings of the warehouse class, not less than 2 cwt. per super. ft. (d) The live load on the roof shall be estimated at ¼ cwt. per super. ft. measured on the surface of such roof.

13. For the purpose of determining the extreme load to be carried on pillars in buildings of more than two storeys in height, a reduction of the live loads shall be allowed as follows:—For the roof and top storey the live load shall be calculated in full. For the next succeeding lower storey a reduction of 5 per cent. from the live load fixed by this section. For the next succeeding lower storey a reduction of 10 per cent. For each succeeding lower storey the amount of the reduction shall be 5 per cent. more than for the storey immediately above until at the eleventh storey from the top the reduction shall be 50 per cent. For each remaining storey, if any, below such eleventh storey from the top the reduction shall be 50 per cent.

14. In pillars the actual working stress per sq. in. shall not exceed that given in the following table and in like proportion for intermediate ratios:—

Where the length divided by least radius of gyration equals	Working stress in tons per sq. in. of section.	Cast-iron.	Steel.	Wrought-iron.
160	—	2512	2142	2142
140	—	2957	2177	2177
120	—	3460	2325	2325
100	—	4017	3170	3170
80	1875	4452	3470	3470
60	2442	4832	3727	3727
40	3026	5100	3895	3895
20	3464	5290	4000	4000

Where a pillar is built into a wall the radius of gyration of that pillar in the direction of the thickness of the wall shall be taken for the purpose of the above table.

15. The actual working stress of iron and steel (except in the case of pillars as hereinbefore set out), in tons per sq. in. of sectional area, shall not exceed those given in the following table:—

Tension.	Compression.	Shearing.	Bearing.
Cast-iron.... 1½	7	2½	8
Wrought-iron 5	4	4	4
Mild steel.... 7½	6	5	10
Cast steel.... 5	10	7½	15

16. In addition to the foregoing provisions and the general rules of construction for buildings of the class to which they belong, as required by the principal Act and any amendment, all skeleton frame buildings shall, as regards their metal framing, bracing, walls, partitions, floors, roofs, staircases and foundations be constructed in such manner as may be approved by the district surveyor.

17. The person proposing to erect a skeleton frame building shall, one month before commencement of the building, deposit with the district surveyor a complete set of the drawings of such building showing the details of construction of all its parts, together with a detailed copy of all the calculations of the stresses and material, such calculations to be in such form as the Tribunal of Appeal shall from time to time determine. Should such drawings or calculations be in the opinion of the district surveyor not in sufficient detail, he may require such further particulars as may be necessary.

18. The district surveyor may, for the purpose of due supervision of the building and at the expense of the owner of the building, cause any pillar to be drilled at any point to ascertain its thickness, and may cause to be made any other tests he may consider desirable.

19. Any person dissatisfied with any requirement of the district surveyor under this section may appeal to the Tribunal of Appeal.

20. There shall be paid to the district surveyor by the builder or the owner in respect of every skeleton frame building, at such time as the drawings are deposited with

the district surveyor, a calculation fee: such fee shall be in addition to the fee payable under section 154 of the principal Act, and shall be according to the following schedule: (See recommendation supra on Steel Construction.)

APPENDIX C.

SUPPORTS UNDER SUPERSTRUCTURES.

In all buildings there shall be on all street frontages, piers, or other supports of stone, granite, brick, metal or other approved materials, from the level of the ground to the level of the main wall of the superstructure above the ground, mezzanini or first floors, of a total breadth on each street frontage equal to the following:—On frontages up to 20ft. wide, one-tenth part; on frontages 20ft. to 30ft. wide, one-ninth part; on frontages 30ft. wide and over, one-eighth part of the respective widths of such frontages.

No piers or other supports shall be placed further apart than 30ft. measured from centre to centre of such piers or other supports, and no single pier shall in any case be less than 15in. on the face other than those at party-walls, which may be not less than 9in. on the face and placed opposite the centre of such party-walls. Such piers shall not be covered with mirrors or otherwise concealed.

Keystones.

The Restoration of Kimberley Church is to be undertaken.

Change of Address.—Messrs. Pugin & Pugin, architects, have removed their London offices to 159, Kensington High Street, London, W.

Société Centrale des Architectes Français.—The eminent architect of the Sorbonne, M. H.-P. Nénot, member of the Institut de France, is the new president, in succession to M. Constant Moyaux.

The Residence of William Pitt, the younger—No. 14, York Place, Portman Square—is to be commemorated by a memorial tablet, which will be erected by the Historical Records Committee of the London County Council.

Partnership.—Mr. J. J. Swalwell, architect and surveyor, of Steam Packet Chambers, Newport (Mon.), has taken into partnership from February 1st Mr. R. Dare Havard, who has been his principal assistant for the past seven years, and in future practice the firm will be styled "Swalwell & Havard."

Engineering Standards Committee.—The committee on cement (chairman, Mr. William Matthews, C.M.G.) has handed over to a small sub-committee the preparation of a draft standard specification. This will be completed in the near future, when it will be thoroughly discussed by the committee as a whole. The committee on cast-iron pipes (chairman, Mr. Charles Hawksley) is at present in process of formation and has barely begun its labours, but an important conference of the leading pipe-founders of this country has already been held.

South Wales Architects.—Speaking last week at a smoking concert of the Cardiff, South Wales and Monmouthshire Architects' Society, Mr. E. Jenkin Williams, the retiring president, expressed regret that the council of the South Wales University had excluded local architects from the competition for designs for the new college. He contrasted this action with that of the Cardiff School Board, who confined the competition for the new higher-grade school at Canton to architects practising within the borough of Cardiff. Mr. C. A. James is the new president.

St. Matthew's Church, Cockington, Torquay, was recently dedicated by the Bishop of Exeter, thus bringing to a close a work which has extended over several years. The church has cost between £7,000 and £8,000, and is built of local red sandstone, with Douling stone dressings. The style is that of Devonshire fifteenth-century Gothic. The roofs covering the nave and aisles are of open-timber construction coloured in red and green, the roof of the chancel being blue. The bosses in the nave and aisles are emblematical, and those in the chancel are foliated. All are richly coloured and gilded. The floor of the chancel and sanctuary is in red, green and white marble. Messrs. Nicholson & Corlette, of London, were the architects.

M. Homolle has been appointed Director of National Museums and of the School of the Louvre.

St. Nathaniel's Church, Windsor, was destroyed by fire on Sunday, the tower only remaining. The fire was caused by the heating apparatus igniting the woodwork.

Cartwright Hall, Bradford.—The joint architects for this building are Mr. J. W. Simpson and Mr. E. J. Milner Allen, of London, not Mr. Simpson alone, as stated on p. 67 of our issue for last week.

"The Extensionist."—The first number of this record of the Central Association of University Extension Students has been sent to us. It will be issued monthly, price 3d. Mr. Max Judge, 7, Pall Mall, S.W., is the hon. secretary.

Municipal and County Club, Whitehall Court, S.W.—Since December 1st last 150 new members have been elected. The committee have decided that an entrance fee shall be fixed as soon as the membership reaches 500. Mr. W. W. Hornsby is the secretary.

The Architectural Association of Ireland held a meeting last week, Mr. C. H. Ashworth, president, in the chair. Mr. Frederick Hicks, ex-president, gave some reminiscences of their excursion to York, which took place last August.

Inverness Town Hall is to be enlarged from plans by Mr. James R. Rhind, architect, Inverness, which were selected in an open competition, in which Mr. A. Hunter Crawford, F.R.I.B.A., Edinburgh, was assessor. The work is estimated to cost £4,500.

Leeds and Yorkshire Architectural Society.—At last Thursday's meeting Mr. W. H. Seth-Smith spoke on behalf of registration, and was opposed by Prof. Beresford Pite. In the discussion that followed all but one of the speakers expressed themselves in favour of registration.

"Impressions and Conclusions on a Continental Tour."—Mr. Macaulay, general manager of the Alexandra Docks, Newport (Mon.), sends us this reprint of an article in "The Iron and Coal Trades Review." Reference is made in it to the Hamburg docks, of the newest of which Mr. Macaulay says "there is nothing in Liverpool, nor, as far as I am aware, in the whole world, to equal this last, with its 35ft. of water, fine quays and magnificent ranges of modern, movable, admirably designed and easy working electric cranes." The dock is about 2,000ft. long and 800ft. wide.

Obituary.

Mr. Henry Brumby, builder, of Sharrow, Sheffield, died last week.

Mr. Barrow Emanuel.—At the moment of going to press we learn, with regret, of the death in London on Sunday last of Mr. Barrow Emanuel, senior partner in the well-known firm of architects, Messrs. Davis & Emanuel, of Finsbury Circus. Deceased was sixty-two years of age.

M. E. J. Corryer, whose death in Paris is announced, was born at Amiens on September 12th, 1837. He studied architecture under Viollet-le-Duc, and his first important works included the Hôtel de Ville of Roanne and the church at Vougy (Loire), whilst other churches were designed in the 'sixties by him, and he carried out various "restorations" in several parts of France. He had been an exhibitor at the Salon since 1864. He was appointed architect of the French Government in 1874, and later he became Inspector-General "des édifices diocésains." M. Corryer was also a distinguished archaeologist, and wrote several books, notably a "Description de l'Abbaye du Mont Saint-Michel et de ses Abords," and a descriptive guide to Mont Saint-Michel.

Coming Events.

Wednesday, February 17.

SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part I.).—Mr. Reginald Dudfield, M.A., M.D., on "Duties of a Sanitary Inspector—(a) Outdoor," at 7 p.m.

EDINBURGH ARCHITECTURAL ASSOCIATION.—Mr. R. H. Bow, C.E., on "The Strength of Scaffolding," at 8 p.m.

ARCHITECTURAL ASSOCIATION (Discussion Section).—Mr. Walter Williams on "The Legal Position of the Architect," at 7.30 p.m.

SOCIETY OF ARTS.—Mr. A. R. Sennett on "Garden Cities in their relation to Industries and Agriculture," at 8 p.m.

BRITISH ARCHAEOLOGICAL ASSOCIATION.—32, Sackville Street, W. Meeting at 8 p.m.

BUILDERS' FOREMEN AND CLERKS OF WORKS' INSTITUTION.—Ordinary Meeting of Members at 8 p.m.

Thursday, February 18.

CARPENTERS' COMPANY.—Prof. Vivian D. Lewes on "Our Atmosphere in its Relation to Health," Carpenters' Hall, London Wall, 8 p.m.

SOCIETY OF ANTIQUARIES.—Meeting at 8.30 p.m.

SOCIETY OF ARTS (Applied Arts Section).—Visit to the "Graphic" Printing Office, from 8 p.m. to 10.30 p.m.

SOCIETY OF ARCHITECTS.—Mr. David N. Nesbit, M.I.M.E., on "Warming and Ventilation," at 8 p.m.

Friday, February 19.

CITY OF LONDON COLLEGE SCIENCE SOCIETY.—Mr. T. Scammell, F.R.G.S., on "Methods of Preserving Wood," at 8 p.m.

SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part I.).—Mr. Reginald Dudfield, M.A., M.D., on "Duties of a Sanitary Inspector—(b) Indoor," at 7 p.m.

INCORPORATED INSTITUTE OF BRITISH DECORATORS.—Mr. George R. Rigby on "Designing for, and the Uses of, Stencilling in Decoration," at 7.30 p.m.

INSTITUTE OF MECHANICAL ENGINEERS.—Fifty-seventh Annual General Meeting at 8 p.m. Discussion on "Heat Treatment of Steel." Mr. R. Threlford, F.R.S., on "The Motion of Gases in Pipes and the Use of Gauges to Determine the Delivery."

ARCHITECTURAL ASSOCIATION.—Mr. W. H. White on "Corner Houses," at 7.30 p.m.

Saturday, February 20.

GLASGOW TECHNICAL COLLEGE SCIENTIFIC SOCIETY.—Mr. Angus MacLean, B.Sc., on "Modern Conception of Matter," at 7.30 p.m.

JUNIOR INSTITUTION OF ENGINEERS.—Visit to the Colonial Consignment and Distributing Company's Frozen Australian Meat Store, Nelson's Wharf, Commercial Road, Lambeth, under the guidance of Mr. C. S. T. Molecey, A.M.I.C.E., Chief Engineer, at 2 p.m.

SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers Part I.).—Inspection and Demonstration at a house in Stoke Newington, at 3 p.m., conducted by Mr. W. Matthews.

ASSOCIATION OF MANAGERS OF SEWAGE-DISPOSAL WORKS.—Meeting at the Westminster Hotel, New York Street, Leeds. Mr. J. Ashton on "The Disposal and Utilization of Sewage Sludge," at 3 p.m.

ARCHITECTURAL ASSOCIATION.—Third Spring Visit.

Monday, February 22.

SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part I.).—Mr. Reginald Dudfield, M.A., M.D., on "Duties of a Sanitary Inspector—(c) Offensive Trades and Trade Nuisances, &c.," at 7 p.m.

ROYAL PHILOSOPHICAL SOCIETY OF GLASGOW (Architectural Section).—Paper by Mr. Robert Scott, F.S.I., I.M., at 8 p.m.

SURVEYORS' INSTITUTION.—Ordinary General Meeting at 8 p.m.

GLASGOW ARCHITECTURAL ASSOCIATION.—Mr. Alex. McGibbon, A.R.I.B.A., on "Byzantine Architecture," at 8 p.m.

Tuesday, February 23.

ARCHITECTURAL ASSOCIATION OF IRELAND.—Mr. Banister Fletcher on "The Life, Work and Influence of Andrea Palladio," at 8 p.m.

INSTITUTE OF SANITARY ENGINEERS (Lectures in Practical Sanitary Science).—Mr. A. Alban H. Scott, M.S.A., on "Quantities and Measurements of Sanitary Works," at 7 p.m.

SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part I.).—Demonstration of Book-keeping as carried out in a Sanitary Inspector's Office, at the Public Health Office, Town Hall, Upper Street, Islington, at 7 p.m., by Mr. James R. Leggett.

SOCIETY OF DESIGNERS.—Sir Wyke Bayliss, F.S.A., on "The History and Authenticity of the commonly received Likeness of Christ," at 8 p.m.

Wednesday, February 24.

SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part I.).—Mr. A. Wellesley Harris, M.R.C.S., on "Infectious Diseases," at 7 p.m. Inspection and Demonstration in the district of Islington, at 2 p.m. conducted by Mr. James R. Leggett.

NORTHERN ARCHITECTURAL ASSOCIATION.—Mr. Ralph Hedley, R.B.A., on "Architectural Details in Charcoal," at 7.30 p.m.

SOCIETY OF ARTS.—Mr. Frank Tiffany on "Mahogany and other Fancy Woods available for Constructive and Decorative Purposes," at 8 p.m.

Thursday, February 25.

CARPENTERS' COMPANY.—Prof. W. Schlich, C.I.E., on "The Forestry Problem in the United Kingdom," Carpenters' Hall, London Wall, 8 p.m.

LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY.—Mr. W. H. Bidlake, M.A., A.R.I.B.A., on "The Romanesque Churches of Auvergne," at 7 p.m.

UNDERGROUND CONVENIENCES.*

Their History and Construction.

By S. L. BARTHOLOMEW, A.M.I.S.E.

I THINK I am accurate in stating that the first underground convenience in London was erected opposite the Royal Exchange in 1885. This was for urinals only. The idea of catering for the comfort of the public in the streets of London, enabling them to have a comfortable wash and brush up amid cleanly surroundings, had not yet dawned on the municipal mind. But the evolution was close at hand, for in 1889 Messrs. B. Finch & Co., Ltd., designed and constructed the well-known convenience at Piccadilly Circus, which included urinals, closets and lavatory, for the first time for both sexes. The original accommodation was fourteen closets and twenty-one urinals (no lavatories) for gentlemen; and five closets and one lavatory for ladies. The extra accommodation provided in 1894 was four urinals and seven lavatories for men, and one closet and five lavatories for ladies. The nett yearly profit from this convenience has been £1,296 under very expensive administration, but this profit-making is exceptional, as many large and well-kept conveniences barely pay expenses, and in many cases they are a burden on the rate-payers.

After 1892 underground conveniences began to increase fairly, and by 1900 nearly every important site in London had its convenience. Provincial towns followed slowly, and to-day every town of at least 16,000 inhabitants has its convenience.

Laying-out.

The site being selected, the outline is chalked out on the road, or in many cases wooden templates are laid down where the shape is irregular, so as to adapt it to the surroundings, as unfortunately in many cases only very narrow passages can be allowed between the pavement kerb and the granite kerb of the refuge. In some cases the passage is only 17ft. wide, as at Tottenham Court Road (Euston Road end); another narrow passage occurs at the convenience just erected near Liverpool Street Station; but I find the average width is about 22ft.

The site now being defined, a close-boarded hoarding 8ft. high is erected, leaving as a rule 5ft. to 6ft. margin round the excavation. This is necessary for the storage of bricks, ballast, cement, &c., and also for erecting the clerk of works' office, foreman's office and sheds for the use of the men before the covering in of the convenience. Most of the storage capacity, however, is in the length, as space is generally not available at the sides on account of the narrow streets.

Excavations.

The site is now excavated to a depth of about 10ft. 6in., and during the excavations the gas, water, electric and hydraulic mains (should there be any) are laid bare and have to be slung up and protected until they are diverted by the various companies to whom they belong. There is generally a clause in the specification to the effect that the authorities will bear the cost of the diversion; but formerly the contractor had to allow for this sporting item in his estimate, as available plans seldom showed what would be met with, large mains appearing just where they were not wanted. This was especially the case in the Parliament Street convenience, where seventeen large mains were met with, which delayed the progress of the structure many months, to the great cost of the then Westminster Vestry. Mains, however, are not the only things found during excavations. One often

comes across most gruesome objects. For instance, at the Liverpool Street convenience the workmen unearthed between 200 and 300 skeletons, which were handed over to University College Hospital. This site was supposed to have been a plague pit of the year 1665; it is just outside the walls of London. In another case, opposite the Law Courts, a large number of bronze and silver coins were found, all subjected to the action of heat, and I was informed by local antiquaries that no doubt they were originally in the clothes of the victims of the plague, which clothes were burnt outside the wall of St. Clement Danes' churchyard. Finds of this kind are generally secured to the Corporation by a special clause.

Foundations and Walls.

The Portland-cement-concrete foundation to receive the structure is now put in about 12in. thick, and the walls made damp-proof by vertical asphalt courses $\frac{3}{4}$ in. thick, laid on the back of the wall—that is, that portion of the wall nearest the excavation—and the space between asphalt and earth filled in with solid concrete. The walls usually consist of stock brickwork on the outside and white-glazed facings inside, of the first quality 18in. thick.

Having now built the walls to the required height, the next step is to get covered in against inclement weather, and this is accomplished by laying rolled steel joists from wall to wall, having a 9in. bearing on York stone templates built into the wall, with an insertion of 8lb. lead strip between the under flange of the girder and the face of the stone template, the object being to give the joists a fair seating.

Prisms.

The surface is then covered in with prism lights. Great care must be taken with these if you wish to avoid future trouble from leaky joints due to vibration of traffic. There are two ways in which the lights are fixed, one being a York stone rebated out to receive the flanges holding the lights; the other being a special L-iron flange bolted through the girder, and the space between filled with bitumen. I consider the latter to be undoubtedly the better, as I find that when the lights are fixed to York stone the vibration gradually shakes away the grouting, causing leakage, whereas a perfectly sound job can be made by bolting the flanges down on to the iron girder; besides, more space can be given for lenses by using this system, as at least 1in. is required when using the stone, whereas the other requires only about $\frac{1}{4}$ in., which makes a considerable difference in a large convenience.

The shape of the roof should be camber form, the idea being to throw the surface water off into the gutter below the ventilating grating. There is a tendency to make these roofs too flat, and the result is that they are always wet and muddy. A 9in. by 9in. granite curb is placed round the convenience and cast-iron guard posts securely let into it.

A grating usually runs round the place, from which the surface water can drain into a gutter provided beneath. This grating does a double work, for it also acts as a ventilator. A ventilating column is usually fixed between the party-walls of the gentlemen's and ladies' side, the base being secured to small trimmers trimmed into the main joist. The inside portion of the base and the whole of the column itself are hollow.

A powerful electric or water-driven fan is fixed to draw out the foul air, which exhausts itself at the top of the column through ventilating slots. These columns are generally constructed so that a lamp can be fixed on top, which helps to remove the suggestion of a ventilating pipe and also makes it more of a feature than an eyesore. These lamps are either gas or electric. If

the site is a large one, sometimes more than one lamp is erected, especially if a sludge tank has to be provided owing to the outlet of the drains being below the sewage level. In these cases, which seldom occur, an electric motor pump is used to pump the sewage out of the sludge tank into the intercepting chamber. The sludge chamber therefore requires a ventilating column, and this is nearly always utilized for a lamp as well.

Fans.

A few words might be said about the use of electric and water fans. In most cases, owing to the proximity of the electric mains, conveniences are lighted with electricity, which is certainly superior to gas, and the fans are driven by the same means; but I consider that the water-driven fan for underground purposes is superior, as the waste water from the fans can be utilized for flushing the automatic tanks over urinals. The water-driven fan is equal in power to the electric.

Having now covered in the convenience and provided the granite kerb and guard-posts as protection against traffic, and erected the lamp column, the railings can be fixed. A kerb, usually of York stone, is placed round the entrance and railings about 4ft. 6in. high let in. I find that for these purposes wrought-iron railings are far more satisfactory than cast, as they are often damaged to such an extent that a portion has to be reinstated, whereas a wrought-iron railing can always be straightened and refixed. I have known cases where a hansom and other vehicles have smashed railings many feet in length. Glass (generally rolled) of a greenish colour, with wire interwoven in it, is fixed in panels inside the railings, partly as a guard against mud and dust accumulating on the staircase and partly as a screen. Strong hinged gates are provided at each entrance, so that they can be securely locked when the convenience is closed, and at the foot of the staircase a collapsible wrought-iron gate is fixed as a further security.

Staircases.

As regards steps, in many instances, owing to the size of the convenience, it is impossible to have a double entrance, but in a busy part, say the Strand, these double entrances are exceedingly convenient, as there is always more or less crush when the staircase is used both as inlet and outlet. Staircases are usually of York stone: sometimes they are provided 7in. thick, but it is always advisable to specify them a multiple of three, as 6in. is sufficient for all ordinary purposes and avoids an unnecessary amount of cutting away to the white-glazed brickwork. The staircases are supported sometimes by pinning them 9in. into the walls, at other times by iron spandrels, and occasionally by boiler-plate, with a good bedding of concrete on top.

The Interior: Drains and Fittings.

Having now briefly described the construction, I will proceed to fit up the interior. The floor surface is first of all excavated to receive the concrete under manholes and drains. It is usually put in 6in. thick under the latter, and also completely surrounding same, and 9in. under the chambers. The pipes used are always stoneware. I have only come across one underground where iron pipes were used, and it always appears to me a great mistake that for the sake of a few pounds an iron system is not installed in place of the pottery. In this particular case the pipes were glass enamelled, which I find most unsatisfactory.

The manholes are arranged to receive every fitting separately. When I say every fitting I mean each branch from the water-closet, each gully receiving the lavatory waste, each storm gutter at the foot of the staircases, and each outlet from the ranges of urinals. Two manholes at least should be provided, as inspection is a great thing

* A paper read before the Institute of Sanitary Engineers on February 3rd, 1904.

in the drainage of an underground and stoppages are of frequent occurrence.

The drains having been laid to receive the fittings, plumbing work is commenced. A water meter is generally fixed in or near the attendant's room. For an underground convenience of fair size I recommend a $1\frac{1}{2}$ in. main. Sometimes in the case of a very large underground $1\frac{1}{2}$ in. mains have to be used. Occasionally these mains are placed between the concrete at the back of the external wall and the ground, which, to say the least, is most unsatisfactory. This was the case in a convenience which came under my notice, and there have been complaints and many repairs in consequence.

The mains can be made very presentable by being neatly fixed to the white-glazed brickwork, the same having been previously plugged with wooden plugs, preferably teak, with cast-lead ornamental tacks and screws, one tack for every 2 ft. run. A full-way stop-cock should be provided immediately where the pipe leaves the water meter, so that the whole of the building can be entirely cut off in case of repairs. A stop-cock should be provided to each water-waste preventer, to each lavatory basin, and to each automatic tank of urinals, if the money to be spent will allow this; to throw a whole row of closets or other fittings out of use because one of them requires repairing is a very serious matter in an underground.

Half-inch branches to the closets and lavatories and automatic tanks are ample on a main pressure. A $\frac{3}{4}$ in. pipe is usually run from the main at some convenient point near the foot of the staircase, to which a $\frac{3}{4}$ in. draw-off cock is fixed, fitted with a nozzle to which a hose pipe can be connected. These hose pipes vary from 30 ft. to 60 ft. in length, and are used for washing the floors, fittings and staircases down, and often for thoroughly swilling out the manholes and washing down the prism lights.

Urinals.

Having now run the services, the fittings are put in position. The best type of urinal for underground purposes, and one which is now finding much favour amongst surveyors, is the circular or V-shaped stall urinal, the back and base being formed of best quality glazed fire-clay; the base made to discharge over a channel, and the whole covered in with gratings, thus leaving the base and the channel easy of access: this is very important, as cigar and cigarette ends are thrown into the urinals and collect over the outlet of the channel, and I find that a urinal having a separate outlet to each stall, the pipe being underground, is not nearly so satisfactory as the open base and channel.

For hard wear and appearance there is nothing to beat St. Ann's marble for the jambs, tops, back skirtings and divisions. This always presents a clean appearance and will stand much harder wear than a urinal composed of fireclay. Each back is fitted with a sparge pipe and shield, or else a brass spreader, which, in the case of a range, is connected by bridging pieces behind the urinal, so that when the water is discharged from the automatic tank it is distributed in such a manner that each stall receives a given quantity: 1 gal. per stall is ample for all practicable purposes. The tanks principally used to flush the urinals are formed of St. Ann's marble, half hexagonal, the front and sides being of thick plate-glass and the interior mechanism of gun-metal and copper. The tanks are made to discharge about every five minutes.

As to the most satisfactory type of closet, I find there is nothing better than the "Syphonic." This closet has a great depth of seal, and being worked by a powerful vacuum its contents are swiftly removed to the drains. It is usual to fix 3-gal. water-waste preventers, even in New River districts, special permission being easily obtainable

for underground conveniences. The closets are sometimes fitted with lift-up teak seats and sometimes with polished mahogany. Teak seems to stand the wear better, being a much harder and more durable wood.

Lavatories.

As regards lavatories, wherever possible I always arrange to use St. Ann's marble tops and fascias and large oval basins and large screw-down valves. The pull-up waste is vastly superior to the plug and washer, and the stand-pipe can be easily removed and cleansed by the attendant. A trap should be placed under each basin, but anti-siphonage is difficult to provide, as there is seldom any means of carrying the pipes into the open air.

The fittings having now been fixed, the partitions between the closets and the lavatories, and the woodwork generally, can be erected. Closet divisions should never be less than 5 ft. long from back to front, and closets at 3 ft. centres or thereabout. The average height of the partition is 7 ft. It is a very good plan to fix these divisions 1 in. or 2 in. above the ground, so that the floor can be thoroughly washed from end to end. The most suitable material for closet partitions is again St. Ann's marble, highly polished, $1\frac{1}{4}$ in. thick; it prevents scribbling.

A wood capping is generally run at the top of the marble divisions as a finish, and is usually fitted into the wood stile. I find the most suitable kind of woodwork is oiled teak. There is one objection to it, an unpleasant smell, though this can be got over somewhat by polishing. Various kinds of wood are used, sometimes oak, sometimes deal, but there is nothing to equal good teak.

The doors are generally made 2 in. thick and the frames 3 in. The tops of the closets generally have either a dentil or other shaped moulding about 9 in. or 12 in. in height. I think the dentil moulding looks best. The doors are usually fitted with an automatic penny-in-the-slot lock as a security against the borough council being defrauded by the attendant. The lavatory doors generally have an ordinary lock and the upper panels glazed.

Miscellaneous Details.

There is usually a box provided for the attendant. I always endeavour to make this as large as possible, as a man who spends the best part of his life in this place should have at least a little comfort. These boxes should be placed so that the attendant can have a general view of the whole of the underground. A stove is fixed for cooking purposes, although in most cases the female attendant looks after this. A cupboard is usually provided under the staircase in which to store towels, soap, &c.

When the whole of the interior has been fitted up ready for use the floor is covered with mosaic (which is the most serviceable, and presents the best appearance) or with black and white tiles. The removable covers on the manholes are made hollow so that the same material with which the floor is covered can be filled into this in order to disguise as much as possible the openings to the chambers. The fall of the floor is generally made to discharge into the urinal gratings. This is found very convenient in most cases, but where not convenient it can be made to discharge into the storm gutters at the feet of the staircases.

The floor having been completed, the electric or gas lighting is next proceeded with, a point usually being fixed over the partitions between the closets, one or two in the lavatory room, one at the foot of each staircase and wherever found necessary. It is always advisable to have a gas service laid on to a few points in case anything should go wrong with the electric system.

The girders are next painted, usually a stone colour or cream to lighten the interior

as much as possible; also any other iron-work, such as rainwater pipes or gutters, unless they are galvanized.

There are a great many items which time will not permit me to mention, but I think a word might be given to the supply of hot water to the lavatories. A geyser fixed to the wall on a slate or iron half-round base should be provided; also an iron feed tank and ball valve, and proper flow and return pipes taken to the lavatory valves. The arrangement of drawing hot water into a jug is not satisfactory in a fair-sized convenience. A speaking tube between the male and female side should also be fixed so that the attendants can communicate with each other in case of necessity.

Bricks and Mortar.

Aphorism for the Week.

The moment a man can really do his work, he becomes speechless about it. All words become idle to him—all theories.—RUSKIN.

Our Plates.

WE are able to publish this week the winning design for the Tite prize of the Institute, by Mr. Heaton Comyn, A.R.I.B.A., and the Soane design by Mr. David Smith, of Dundee, awarded a certificate of honourable mention. We would especially draw attention to the detail of Mr. Comyn's design, reproduced on p. 78 of this issue, as being a very delightful piece of work.

The Council's Offices.

£20,000 a year for office rent is pretty extravagant, even for the London County Council; and to that will now be added the £8,300 for the remaining eleven years' lease of Coutts' Bank, as the Council decided last week: yet we are assured there is good reason for this, as the object is to prevent fresh interests being acquired in the property, and so to save money for the ultimate widening of the Strand at this part. One wonders, however, how many more disjointed places the Council is going to do its work in, and how soon the inevitable necessity for one central establishment will be met. The present system is most inconvenient to the staff and very uneconomical for the ratepayers.

Manufacture in Art.

MR. W. GILBERT (of the Bromsgrove Guild of Applied Art) read a paper on "Evolution of Manufacture in Art" before the Sheffield Society of Architects and Surveyors last week. He traced the origin of the guilds from the earliest period, and referred to the beautiful work of the mediæval craftsman when there was no division of labour. He also showed how great historical occurrences affected the guilds by developing art workshops and thus divorcing the artist and craftsman. The influence of Italian "commercial" artists during the Renaissance was referred to at some length and the various phases of craft work up to the nineteenth century. The institution of classes for designing in this country was also mentioned. In 1851 there were twenty-two such classes in existence. The influence of the Great Exhibition was described. The conditions which alone would produce good work in art classes were that they should not be municipal factories competing in any way with local manufacturers, and that they should not be the home of fads but the home of thought. The lecturer commended individualism in art. Craftsmen owed much to architects. He alluded to the fine work of the late J. D. Sedding, especially at the Holy Trinity, Chelsea, where his work was combined with the craftsmanship of Onslow Ford, Pomeroy and others. The lecturer, in conclusion, pleaded for greater association between architects and craftsmen.

Tenders.

Information from accredited sources should be sent to "The Editor" at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Addressed postcards on which lists of tenders may be stated will be sent post free on application to the Manager, BUILDERS' JOURNAL, 6, Great New Street, Fetter Lane, E.C.

Bristol.—For pulling down 35, Mary-le-Port Street and premises in the rear, and for erecting a new warehouse, for Messrs. Lindrea & Co., Ltd. Messrs. Herbert J. Jones & Son, architects, 12, Bridge Street, Bristol:—

Forse & Sons	£9,450 0
H. J. Jones & Co.	9,197 0
W. Cowlin & Son	9,084 0
A. E. Longden	9,080 0
J. E. B. James	8,992 7
Stephens & Bastow	8,978 0
E. Walters & Son	8,686 0
A. E. Denby & Co.	8,399 0
Eastbrook & Son	8,320 0
J. Browning, Fishponds, near Bristol ..	8,317 0
A. J. Beaven	8,065 0
R. F. Ridd	8,040 10
G. Humphreys	8,018 0
R. Wilkins & Sons*	7,968 0
S. Roberts, Plymouth	7,625 0
Radford & Greaves, Derby	6,824 0

* Accepted. [Rest of Bristol]

Camelsdale, near Haslemere.—For the erection of a new school to accommodate 120 children, for the West Sussex Education Committee. Mr. John H. Howard, architect and surveyor, The Cottage, Lower Street, Haslemere:—

D. Fry, Godalming	£1,530
F. Milton, Witley, Surrey	1,296
J. W. Humphreys, Godalming	1,290
C. Baker, Selbourn, Hants	1,267
Haslemere Builders, Haslemere	1,240
L. M. Thompson, Kirdford, Billingshurst ..	1,220
W. Rollason, Hindhead, Haslemere	1,195
W. Harding, Shottermill, Haslemere	1,150
Mitchell, Shalford Brothers, Godalming ..	1,132

Chester.—For the erection of business premises at 83, Foregate Street, for Messrs. J. Hepworth & Son, Ltd., of Leeds. Mr. E. Hall Ballan, architect, 19 and 20, Baxter Gate, Doncaster. Quantities by Mr. Hoffman Wood, 14, Park Square, Leeds:—

Morton Browne	£1,415 6 9
W. Dutton	1,405 0 0
Edwin Jones	1,375 10 0
W. Browne	1,339 6 0
H. Vernon	1,309 0 0
Wm. Vernon & Son*	1,125 0 0

* Accepted. [All of Chester.]

Croydon.—For the extension of the electricity works, for the Corporation:—

Smith and ironfounder's work.

A. White & Co.	£5,000 0 0
Stephens Smith & Co., Ltd.	4,643 18 0
Gibbons Brothers, Ltd.	3,810 0 0
A. & J. Main	3,789 14 1
E. C. & J. Keay, Ltd.	3,657 8 3
C. Jackson	3,635 9 4
J. Mundy	3,601 17 5
Gilbert, Thompson & Co.	3,433 18 1
Walker Brothers, Ltd.	3,372 0 0
G. & H. Measures, Ltd.	3,160 18 11
Bulled & Co.	3,159 0 0
Jules, Coulson, Stokes & Co.	3,125 10 0
G. Sands & Son	2,982 10 0
Dorman, Long & Co.	2,905 11 1
Powers & Deane, Ransomes, Ltd.	2,852 16 11

* Accepted.

Clacton-on-Sea.—For alteration and conversion of business premises in Beach Road, for Messrs. Starling & Son. Mr. George Gardiner, architect and surveyor, Clacton-on-Sea:—

A. W. Coleman	£225 0 0
W. H. Bray	202 10 0
H. W. Gladwell, Walton	193 14 6
James McKay*	183 0 0

* Accepted.

Durham.—For the construction of pipe sewers, sewage tanks, bacteria beds, a storm-water filter, &c., for Giles-gate Moor, New Durham and Dragon Villa, &c., in the parish of Belmont and West Sherburn, for the Durham R.D.C. Mr. George Gregson, surveyor, 38, Saddler Street, Durham:—

Hardy & Atkinson, West Hartlepool ..	£5,792 2 5
G. T. Manners, Durham	5,300 0 0
Johnson & Strong, West Stanley	5,229 6 0
J. Laing & Son, Carlisle	4,805 0 0
F. Milward & Co., Carlisle	4,381 0 0
J. G. Bradley, Durham	4,054 12 1
J. Carrick,* Durham	3,997 4 2

* Accepted.

Grays (Essex).—For alterations and additions to premises, 18 and 20, High Street, for Mr. C. Mitcham. Mr. Christopher M. Shiner, A.R.I.B.A., architect, 6, 7 and 8, Crutched Friars, E.C.:—

J. J. Lawrence, Grays	£1,525
G. Brown	1,517
E. West, Chelmsford	1,470
J. S. Hammond & Son, Romford	1,453
T. Bruty, Hornchurch	1,377

Ipswich.—For the erection of solicitors' offices, Arcade Street. Mr. G. W. Leighton, architect:—

F. Bennett	£1,799 0
H. J. Linzell	1,797 0
M. Death	1,793 0
C. Green	1,750 0
A. Sadler	1,725 0
Cubitt & Gotts	1,644 15
V. A. Marriott	1,625 0

Ipswich.—For extension of premises, Cornhill Messrs.

Eade & Johns, architects:—	
S. A. Kenney	£2,595
W. H. Death	2,259
Cubitt & Gotts	2,231
Scales & Robinson	2,210
Grinwood & Sons	2,197
H. J. Linzell	2,127
R. Girdling	2,120
S. Skerrett	2,069
A. Sadler	2,058
C. A. Green	2,057
Parkington & Son*	2,000

* Accepted.

London.—For enlarging deaf centre, &c., at the Capland Street site, Lissos Grove, for the London School Board. Mr. T. J. Bailey, Board's architect:—

J. Simpson & Son	£2,711 0
F. Gough & Co.	2,632 0
G. Neal	2,642 1
Marchant & Hirst	2,615 0
H. Wall & Co.	2,487 0
J. Willmott & Sons	2,474 0
G. S. S. Williams & Son	2,429 0
General Builders, Ltd.	2,312 0
Stevens Brothers	2,296 0
Treasure & Son	2,286 0
L. H. & R. Roberts*	2,273 10
J. Allen & Sons, Ltd.	2,035 10

* As J. Allen & Sons, Ltd., the contractors whose tender is lowest, state that they are not prepared to sign the Board's printed form of agreement, the committee recommend the acceptance of the second lowest tender—that of L. H. & R. Roberts—amounting to £2,273.

London, S.E.—For the construction of a new board-room, offices and relief station, for the Camberwell Board of Guardians:—

Patman & Fotheringham	£22,700
G. Parker	21,617
Holloway Brothers	21,648
Foster & Dicksee	21,234
Balaam Brothers	21,150
Holliday & Greenwood	20,677
F. Gough & Co.	20,554
Higgs & Hill, Ltd.	20,474
H. L. Holloway	20,137
F. & H. F. Higgs*	20,060

* Accepted.

London.—For the erection of three brick buildings for temporary accommodation at the Manor Lane site, Lee, for the London School Board. Mr. T. J. Bailey, Board's architect:—

Mitson & Harrison	£4,716 10
W. Harris	4,488 0
Holliday & Greenwood, Ltd.	4,366 0
J. Smith & Sons, Ltd.	4,320 0
H. Groves	4,315 0
T. D. Leng	4,297 0
Thomas & Edge	4,272 0
F. & H. F. Higgs	4,270 0
E. Lawrence & Sons	4,254 0
J. Appleby & Sons	4,220 0
W. Downs	4,193 0
E. P. Bulled & Co.	4,159 0
J. & C. Bowyer*	4,045 0

* Recommended for acceptance.

London.—For the erection of school for physically defective children, Bassett Road site, Battersea, for the London School Board. Mr. T. J. Bailey, Board's architect:—

General Builders, Ltd.	£5,370
J. Simpson & Son	5,091
Leslie & Co., Ltd.	4,900
Treasure & Son	4,690
Hudson Brothers	4,678
Lathey Brothers	4,655
J. Smith & Sons, Ltd.	4,579
W. Johnson & Co., Ltd.	4,499
W. Akers & Co.	4,405
Holloway Brothers, Ltd.	4,403
Simpson & Co.	4,360
E. P. Bulled & Co.	4,344
F. Briggs	4,256
J. Garrett & Son*	4,257
Edwards & Medway	4,309

* Recommended for acceptance.

London.—For sanitary and drainage works at Mowlem Street School, Cambridge Heath, for the London School Board. Mr. T. J. Bailey, Board's architect:—

E. Lawrence & Sons	£3,258
G. S. S. Williams & Son	3,144
A. Porter	3,184
R. P. Beattie	2,963
Stevens Brothers	2,895
J. Willmott & Sons	2,895
L. H. & R. Roberts	2,888
J. Peattie	2,878
Asby & Horner	2,871
J. W. Falkner & Sons	2,867
F. Bull	2,856
McCormick & Sons*	2,491

* Recommended for acceptance.

London, S.W.—For the erection of a block of offices to be called Parliament Chambers, Great Smith Street, Westminster. Messrs. Palgrave & Co., architects, 28, Victoria Street, S.W. Quantities by Mr. James Farrell:—

J. F. Holliday	£26,500
Kirk & Kirk	24,756
Martin, Wells & Co., Ltd.	24,419
C. Gray	24,119
F. Bush	24,789
J. Ferguson & Co.*	22,500
J. Mowlem & Co., Ltd.	21,898
W. Pattinson & Sons	21,875
Perry & Co.	21,683
G. E. Wallis & Sons	21,444
Patman & Fotheringham	21,163
W. H. Lorden & Son	20,969
L. Whitehead & Co., Ltd.	20,875
F. G. Minter	20,790
W. Smith & Sons	19,894

* Too late.

London, W.—For the extension of their workhouse in Harrow Road, W., for the Paddington Board of Guardians. Mr. F. J. Smith, F.R.I.B.A., architect, Parliament Mansions, Victoria Street, S.W.:—

Women's block.

Stimpson & Co., Brompton Road	£20,760 0
Martin, Wells & Co., Aldershot	20,276 0
Foster Brothers, Norwood Junction	19,911 0
Thompson & Co., Hampstead	19,650 0
F. & E. Davey, Ltd., Southend	19,326 0
Perry & Co., Bow	19,308 0
Godson & Sons, Kilburn Lane	19,099 0
Willcock & Co., Wolverhampton	18,875 0
Richards & Co., Croyley Road, W.	18,865 0
Chessum & Sons, Bow	18,821 0
Kirk & Randall, Woolwich	18,766 0
Leslie & Co., Kensington	18,753 0
Kellett & Sons, Willesden	18,516 0
Smith & Sons, Croydon	18,500 0
L. F. Lamplough, Notting Hill	18,470 0
Ferguson & Co., Holborn	18,450 0
Pattinson & Sons, Westminster	18,324 0
H. Kent, Lewisham	18,320 0
B. E. Nightingale, Lambeth	18,299 0
Lawrence & Son, Waltham Cross	18,236 0
F. G. Minter, Putney	18,070 0
Shillitoe & Sons, Bury St. Edmunds	18,000 0
W. Wallis, Balham	17,998 0
Hadley & Sons, Staffordshire	17,447 0
Dearing & Son, London, N.	17,210 0
Appleby & Sons, Lambeth	17,126 0
Grimwood & Sons* Suffolk	16,900 0
Cowley & Drake, Willesden Green	16,645 13
Gregar & Son, Stratford	15,950 0

Men's block.

Gregar & Son	18,937 0 0
Stimpson & Co.	16,986 0 0
Martin, Wells & Co.	16,459 0 0
Foster Brothers	16,420 0 0
Thompson & Co.	16,150 0 0
F. & E. Davey, Ltd.	15,949 0 0
Perry & Co.	15,941 0 0
Chessum & Sons	15,617 0 0
Richards & Co.	15,594 0 0
Willcock & Co.	15,500 0 0
Kellett & Sons	15,331 0 0
Pattinson & Sons	15,319 0 0
Lawrence & Son	15,247 0 0
Kirk & Randall	15,203 0 0
Leslie & Co.	15,087 0 0
Godson & Sons	15,076 0 0
Shillitoe & Son	15,000 0 0
Ferguson & Co.	15,000 0 0
H. Kent	14,979 0 0
Smith & Sons	14,975 0 0
B. E. Nightingale	14,969 0 0
L. F. Lamplough	14,879 0 0
F. G. Minter	14,579 0 0
Appleby & Sons	14,304 0 0
Dearing & Son	14,290 0 0
Hadley & Sons	14,107 9 11
Grimwood & Sons*	14,085 0 0
Cowley & Drake	13,937 7 0
W. Wallis	13,798 0 0

* Accepted.

London.—For the erection of a special school for sixty mentally defective children at Plassy Road site, Catford, for the London School Board. Mr. T. J. Bailey, Board's architect:—

F. G. Minter	£4,133 0
Rice & Son	3,743 0
J. Garrett & Son	3,664 0
Edwards & Medway	3,649 17
Thomas & Edge	3,633 0
E. P. Bulled & Co.	3,554 0
T. D. Leng	3,498 0
J. & C. Bowyer	3,487 0
J. Appleby & Sons	3,310 0
W. Akers & Co.*	3,141 0

* Recommended for acceptance.

London.—For the erection of guardians' offices, &c., at Camberwell, for the guardians of St. Giles, Camberwell. Mr. Edwin T. Hall, F.R.I.B.A., architect, 54, Bedford Square, W.C.:—

Patman & Fotheringham	£22,000
Holloway Brothers	21,648
G. Parker	21,647
Foster & Dicksee	21,234
Balaam Brothers	21,150
Holliday & Greenwood	20,677
Gough & Co.	20,554
Higgs & Hill	20,474
H. L. Holloway	20,137
F. & H. F. Higgs	20,060

Lower Hagley (Worce.).—For the construction of about 7,600 yds. of 6 in., 8 in., 9 in. and 10 in. pipe sewers, with the necessary manholes, lampholes, flushing chambers, &c., and of bacterial sewage-disposal works at Lower Hagley, in the county of Worcester, for the Bromsgrove Rural District Council. Mr. Harry W. Taylor, A.M.I.C.E., engineer, St. Nicholas Chambers, Newcastle-on-Tyne:—

H. Roberts, West Bromwich	£5,420
Kellett & Co., Northfield	5,140
Waring & Sons, Huddersfield	5,247
Barker Brothers, Cannock	4,939
Johnson & Langley, Leicester	4,897
Willelts & Sons, Old Hill	4,858
T. A. Meredith, Cradley	4,702
Johnson Brothers, Hereford	4,691
Curral, Lewis & Martin, Birmingham ..	4,684
Vale & Son, Stourport	4,679
Bayard & Sons, Gloucester	4,609
Morley & Sons, Keighley	4,405
Jameson & Son, Birmingham	4,303
G. Law, Kidderminster	4,247
G. Holloway, Wolverhampton	4,218
A. B. & W. J. Tilt,* Birmingham Road, Bromsgrove	4,107

* Accepted.

(Continued on p. xx.)

Electrical Notes.

Electric Heating.

Although the actual heat which can be generated by a given amount of electrical energy is a fixed quantity, there are many different methods of radiating or concentrating that heat, as well as a few principal methods of producing it. The first consideration is purely mechanical, depending on the construction of the apparatus containing the heat-producing elements. The second, although of a mechanical nature, is really electrical in design, and may be expressed as the means adopted for efficiently converting the electrical energy into heat. All such matters are based on one principle, namely, securing some form or other of resistance to the passage of the current. The chief systems employed are the incandescent lamp filament (which gives out radiant heat), coils of high resistance wire embedded in enamel, and mica strips coated with a film of metal. The two first are used only for radiating purposes; the third and fourth for both radiating and cooking.

The Radiant Heater.

The incandescent lamp radiator, while not producing any more heat for a given consumption of electrical energy, also throws out a certain amount of red rays, and is thus not only a cheerful heater, but in a modified form can be adopted as a light bath for medical purposes. It is supplied by the Dowsing Radiant Heat Co., Verity's Ltd., and the General Electric Co., but it is the first-named firm which introduced the system and has made the light bath a speciality. The lamps, which take about 200 watts each, or 2 amperes at 100 volts pressure, are made by several incandescent lamp makers, and having very long fila-

ments they should be carefully treated; a very frequent source of breakage of filaments is due to "dusting" by servants. In the Dowsing patent system the lamps are placed in front and at the points of a zig-zag reflector, and there is a special device for securing proper convection. In the Verity radiator the lamps are placed in the angles of a zig-zag reflector; and the General Electric Co. simply use a corrugated reflector. Thus, whilst the same amount of heat is produced, different methods are employed for reflecting and radiating it. The chief advantage of this system is that the heat is available at once.

The Mica Strip Radiator.

This system, which is of more recent origin, has only lately been worked in England by the British Prometheus Co., of Kingston-on-Thames, is of quite a different construction than the last-mentioned one although essentially a non-radiant resistance system, and in our opinion is destined to have an important future because the construction is so simple and the elements are so easily replaced, which is not the case with a resistance coil heater. Briefly, the resistances are formed by a patent system which comprises the brushing of mica strips with a solution of rare metals. The moisture and salts are then driven off by heat, and there remains a film of pure alloy which, owing to its small section, has an enormous electrical resistance. The strips can be joined together in any way desired in order to produce the exact resistance required, and it will readily be understood that their renewal is an easy matter. The company has recently introduced some new forms of radiators in which an incandescent lamp is included: thus a certain amount of radiant heat is also available in addition to that produced by

conduction, and this gives a cheerful effect which would otherwise be wanting. A minimum life of five years is claimed for these radiators, and as the whole of the back is removable for obtaining access to the lamp and elements the former can easily be examined or renewed if necessary. Another advantage of the addition of the lamp is that by its use a small amount of heat can at once be generated for local purposes. The company lists a large variety of radiators of which quick delivery can be given. With the low tariffs now obtaining for current for heating purposes it may confidently be assumed that the use of electric radiators will rapidly replace the gas heaters (and eaters) in the near future.

The Resistance Coil Radiator.

This system is used by Crompton & Co., Ltd., and the General Electric Co. It consists essentially of coils of high-resistance wire, which are embedded in a special enamel having a co-efficient of expansion equal to that of the metal of which the wire is drawn. Thus the enamel does not crack when the wire expands. This system, it will be understood, readily lends itself to cooking purposes, as the coils take up little space and can thus be fixed in the bottom of cooking utensils or in the walls of stoves. For radiating purposes it has only two advantages over the incandescent lamp, and these are the smaller space occupied and greater strength. The radiators can easily be carried about and will bear a good deal of rough treatment. But, on the other hand, they do not radiate so well and they take an appreciable time to get warm. They are really only heaters and not radiators, and have a cheerless look about them which is worse than that of a steam coil. As heaters, however, they have their use, particularly for tramcars and ships' cabins. A.M.I.E.E.

The Edison & Swan United Electric Light Company, Limited,

HEAD OFFICES, WAREHOUSE & SHOWROOMS: EDISWAN BUILDINGS, QUEEN STREET, LONDON, E.C.

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LIVERPOOL.
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IT IS BEST AND CHEAPEST IN THE END.

By Royal Warrant



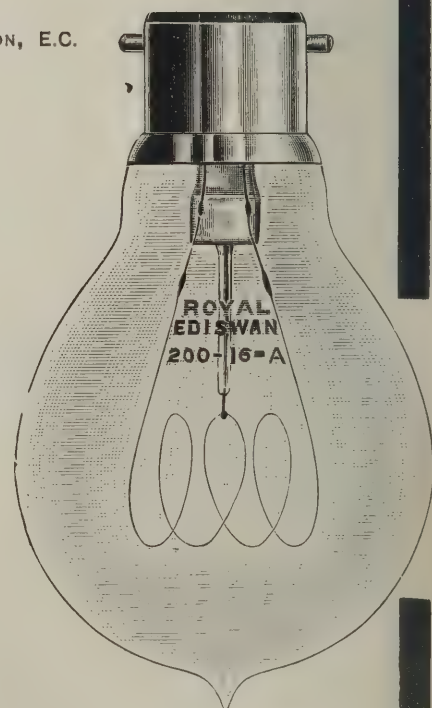
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Complete List of Contracts Open.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
BUILDING:			
Feb. 18	Abersychan, Wales—Altering Hotel	Guardians	T. Edwards, Rhymney Brewery, Rhymney.
" 18	Battle, Sussex—Enlargement of Board Room	Grammar School Governors	F. G. Ticehurst, Clerk, Union Offices, Battle.
" 18	Boston, Lincs—School	United Steam Fishing Co., Ltd.	J. Rowell, Architect, Market Place, Boston.
" 18	Crowley, Lincs—Chapel, &c.	Baptist Church Trustees	T. B. Thompson, 15 Parliament Street, Hull.
" 18	Grimsby—Store, &c.	Southwark Union Guardians	Secretary, United Steam Fishing Co., Ltd., Grimsby.
" 18	Hull—School Buildings, &c.	Commissioners of H.M. Works, &c.	T. B. Thompson, 15 Parliament Street, Hull.
" 18	London, S.E.—Alterations, &c., to Relief Station	Gas Committee	G. D. Stevenson, 13 and 14 King Street E.C.
" 18	Portobello, Scotland—Post Office	Sanitary Committee	H.M. Office of Works, 3 Parliament Square, Edinburgh.
" 18	Salford—Lime	Crewkerne United Breweries Co.	W. Woodward, Engineer, Gas Offices, Bloom Street, Salford.
" 18	Killarney—Boiler-House, &c.	Highways Sewerage Committee	J. F. Fuller, 179 Great Brunswick Street, Dublin.
" 18	Lancaster—Extensions at the Sanatorium	Corporation	Borough Surveyor, Market Square, Lancaster.
" 18	Somerton—Rebuilding	Parks and Cemeteries Committee	W. T. Isaacs, Secretary, Crewkerne.
" 19	Barnstaple—Cleaning and Decorating Church	Mrs. Robertshaw	Vicarage, Landkey, Barnstaple.
" 19	Sheffield—Cement and Lime	Harbour Trustees	C. F. Wike, City Surveyor, Town Hall, Sheffield.
" 19	Leeds—Conveniences	School Board	City Engineer, Leeds.
" 19	Manchester—Bridge	Corporation	City Surveyor, Town Hall, Manchester.
" 20	Wadebridge, Cornwall—Residence	Corporation	W. T. Mear, Architect, Rock, Wadebridge.
" 20	Wick—Wharf	County Council	J. Barron, 216 Union Street, Aberdeen.
" 20	Keighley—School	City Council	A. P. Harrison, 18 Cooke Lane, Keighley.
" 20	Northampton—Cement, Lime, Bricks, &c.	Caledonian Railway Co.	A. Fidler, Borough Engineer, Guildhall, Northampton.
" 20	Plymouth—Cement	Corporation	J. Paton, Borough Surveyor, Municipal Offices, Plymouth.
" 20	Reading—Hospital	Education Committee	C. Smith & Son, 164 Friar Street, Reading.
" 20	Bangor, Wales—Workmen's Houses	Bank of Liverpool, Ltd.	J. Gill, City Surveyor, Town Hall, Bangor, Wales.
" 21	Moonamean, Ireland—Schoolhouse	F. P. Lightfoot	J. M'Cann, Ring, Dungarvan.
" 22	Glasgow—Station Buildings	Education Committee	Company's Engineer, Buchanan Street Station, Glasgow.
" 22	Glasgow—Alterations to Office Premises	Education Committee	F. Burnett, 180 Hope Street, Glasgow.
" 22	Workington—Classrooms, &c.	Hornsey U.D.C.	Architect, 105 Harrington Road, Workington.
" 22	Deal—Cement and Chalk	Building Club Committee	Town Clerk, Deal.
" 22	Arnside—Alterations to Bank	Rural District Council	R. B. Barker, Architect, Arnside.
" 22	Devil's Bridge—Alterations to Hotel	Urban District Council	G. T. Bassett, Architect, Aberystwyth.
" 22	Stoke-upon-Trent—School	Urban District Council	W. L. Copeland, Secretary, St. Peter's Chbrs., Stoke-upon-Trent.
" 22	London, N.—Cement	Urban District Council	E. J. Lovegrove, Municipal Offices, Southwood Lane, Highgate, N.
" 22	Tonypandy, Wales—Fifty-eight Houses	Urban District Council	Lewis & Morgan, 55 Dunraven Street, Tonypandy, Wales.
" 22	Runcorn—Hospital	Urban District Council	G. E. Bolshaw, 189 Lord Street, Southport.
" 22	Beckenham—Bricks, Cement, &c.	Urban District Council	F. Stevens, Clerk, Council Offices, Beckenham.
" 22	London, N.W.—Lime, Cement, Bricks	Urban District Council	W. N. Blair, Borough Surveyor, Town Hall, St. Pancras.
" 23	Tredegar—Cottage Homes	Urban District Council	W. B. Rees, 37 St. Mary Street, Cardiff.
" 23	Epsom—Additions, &c., to Workhouse	Urban District Council	H. D. S. Wood, 157 Wool Exchange, Coleman Street, E.C.
" 23	Southall, Middlesex—Lime and Cement	Urban District Council	R. Brown, Engineer, Public Offices, Southall.
" 23	Walthamstow—Tramway Car Sheds	Urban District Council	G. W. Holmes, Engineer, Town Hall, Walthamstow.
" 23	Manchester—Station Extensions	Urban District Council	Engineer, Hunt's Bank, Manchester.
" 23	Carlisle—Two Houses and Shops	Urban District Council	H. H. Hodgkinson, 9 Lowther Street, Carlisle.
" 23	Bromley, Kent—Builders' Materials	Urban District Council	F. H. Noruan, Town Clerk, Municipal Offices, Bromley, Kent.
" 23	Whitehaven—Bricks and Cement	Urban District Council	Borough Surveyor, Town Hall, Whitehaven.
" 23	London, N.W.—Lime and Cement Jobbing Works	Urban District Council	S. W. Ball, Clerk, Public Offices, Dyne Road, Kilburn, N.W.
" 24	Liverpool—Public Baths	Urban District Council	W. R. Court, Engineer, Municipal Offices, Liverpool.
" 24	London, E.C.—Builders' Materials	Urban District Council	T. D. Mann, Clerk, Board's Offices, Embankment, London, E.C.
" 24	Knutsford—Library	Urban District Council	Darbyshire & Smith, 17 Brazennose Street, Manchester.
" 25	Rainhill, Lancs—Two Asylum Wards	Urban District Council	J. Gornal, Clerk, Clerk's Office, Asylums Board, Lancashire.
" 25	Stradbroke, Suffolk—Police Station	Urban District Council	H. Miller, 16 Museum Street, Ipswich.
" 25	Woolwich—Cement	Urban District Council	B. E. F. Sheehy, 57 George Street, Limerick.
" 25	Ballyhea, Charleville, co. Cork—Completion of House	Urban District Council	N. Scorgie, Borough Engineer, Town Hall, Hackney, N.E.
" 25	London, N.E.—Lime and Portland Cement	Urban District Council	Tramway General Offices, 32 Blackfriars Street, Salford.
" 26	Salford—Cement	Urban District Council	G. Truckel, 64 The Crescent, Eastleigh.
" 26	Eastleigh—Church	Urban District Council	J. H. Evans, Clerk, Visiting Committee, Talgarth.
" 26	Talgarth—Two Cottages	Urban District Council	J. H. Evans, Clerk, Visiting Committee, Talgarth.
" 26	Talgarth—Farm Buildings	Urban District Council	R. N. Partridge, 6 Waterloo Place, London, S.W.
" 27	London, W.—Boiler-house, &c.	Urban District Council	Everard & Pick, Architects, Millstone Lane, Leicester.
" 27	Narborough, near Leicester—Asylum	Urban District Council	W. G. Scott & Co. Architects, Victoria Buildings, Workington.
" 27	Cockermouth—Alterations to Buildings, &c.	Urban District Council	J. Bell, Clerk, District Council Offices, Surbiton.
" 27	Surbiton—Buildings	Urban District Council	Stores Clerk, Gasworks, Earlestown.
" 27	Earlestown, Lancs—Lime and Brick, &c.	Urban District Council	J. Simmonds, 3 Sheet Street, Windsor.
" 27	Eton, Bucks—Fire-Brigade Station	Urban District Council	Commandant, Royal Irish Constabulary Depot, Phoenix Park, Dublin.
" 29	Dublin—Lime, &c.	Urban District Council	J. Lord, Borough Engineer, Town Hall, Halifax.
" 29	Halifax—Lime and Cement	Urban District Council	Genl. Section, Architect's Dept., County Hall, Spring Gardens, S.W.
" 29	London, S.E.—Conveniences	Urban District Council	F. J. Tootel, 74 Vallance Road, Whitechapel, N.E.
" 29	London, E.—Workhouse Building	Urban District Council	G. Green, Borough Engineer, Town Hall, Wolverhampton.
Mar. 1	Wolverhampton—Cement and Lime	Urban District Council	Engineer, Paddington Station, London.
" 1	Cowley, near Uxbridge—Passenger Station	Urban District Council	Engineer, Paddington Station, London.
" 1	Paignton, Devon—Waiting-rooms	Urban District Council	Engineer, Paddington Station, London.
" 1	Greenford, Middlesex—Seven Houses	Urban District Council	Engineer, Paddington Station, London.
No date.	Liverpool—Alterations, &c., to Offices	Urban District Council	P. Waterhouse, 20 New Cavendish Street, Portland Place, W.
" "	Crowley, Lincs—Chapel	Urban District Council	T. B. Thompson, 15 Parliament Street, Hull.
" "	Hull—Church Schools	Urban District Council	T. B. Thompson, 15 Parliament Street, Hull.
" "	Finchley—Six Houses	Urban District Council	R. J. Tasker, 38 Joun Street, Bedford Row, W.C.
ENGINEERING:			
Feb. 18	London, S.E.—Fire Mains	Urban District Council	Newman & Newman, 31 Tooley Street, S.E.
" 18	Manchester—Asphalt Work	Urban District Council	W. Hunter, 41 Spring Gardens, Manchester.
" 19	Londonderry—Sinking Well	Urban District Council	M. A. Robinson, Richmond Street, Londonderry.
" 19	Mountain Ash, Wales—Gasholder Tank	Urban District Council	Corbett, Woodall & Son, Civil Engineers, Palace Chambers, Bridge Street, Westminster, S.W.
" 20	Radeliffe, Lancs—Electric Lighting	Urban District Council	Laoy & Sillar, 2 Queen Anne's Gate, Westminster, S.W.
" 20	Newburgh, Scotland—Filters	Urban District Council	W. D. Sang & Lockhart, Kirkcaldy.
" 20	Chelmsford—Engine, &c.	Urban District Council	Borough Surveyor, 16 London Road, Chelmsford.
" 22	Runcorn—Waterworks	Urban District Council	G. F. Ashton, 71 High Street, Runcorn.
" 22	Edinburgh—Engine and Dynamo	Urban District Council	Resident Electrical Engineer, Dewar Place Station, Edinburgh.
" 22	Hanley—Electric Lighting Plant	Urban District Council	C. A. Cowell, Corporation Electrical Engineer, Electricity Works, Park Road, Hanley.
" 23	Brighton—Winding Shaft, &c.	Urban District Council	F. J. Tillstone, Town Clerk, Town Hall, Brighton.
" 24	London, N.—Conduits and Mains	Urban District Council	Borough Electrical Engineer, 50 Eden Grove, Holloway, N.
" 25	London, N.—Electrical Stores	Urban District Council	W. F. Dewey, Town Clerk, Town Hall, Upper Street, N.
" 25	Cheshunt—Plating Wheels	Urban District Council	R. H. Jeffes, Engineer, Manor House, Cheshunt.
" 25	Walton-on-the-Naze—Groyne	Urban District Council	H. W. Gladwell, High Street, Walton-on-the-Naze.
" 26	Hull—Bridge Work	Urban District Council	A. E. White, City Engineer, Town Hall, Hull.
" 26	Sunderland—Crane, &c.	Urban District Council	J. F. C. Snell, Borough Electrical Engineer, Town Hall, Sunderland.
" 27	Hitchin—Hot-Water Supply, &c.	Urban District Council	R. E. Middleton, 17 Victoria Street, S.W.
" 29	Midhurst, Sussex—Drainage, &c.	Urban District Council	J. Taylor, 305 & S. Crimp, 27 Great George Street, Westminster.
" 29	Canbuslang, Scotland—Electric Lighting	Urban District Council	Hunter & Jack, 101 St. Vincent Street, Glasgow.
" 29	Halifax—Electrical Stores	Urban District Council	W. M. Rogerson, Borough Electrical Engr., Foundry St., Halifax.
Mar. 1	Manchester—Electric Hoists and Cranes	Urban District Council	W. H. Hunter, 41 Spring Gardens, Manchester.
" 1	Dublin—Engines	Urban District Council	T. Morrison, Secretary, Amiens Street Terminus, Dublin.
" 3	Fulham—Electrical Stores	Urban District Council	R. M. Prescott, Clerk, Town Hall, Fulham.
" 3	Cardiff—Reservoir	Urban District Council	C. H. Priestley, Waterworks Engineer, Town Hall, Cardiff.
" 5	Coventry—Tramways	Urban District Council	I. E. Winslow, 30 Bishopsgate Street Within, E.C.
" 7	Birmingham—Electric Power Station	Urban District Council	J. D. Watson, Engineer, 119, near Birmingham.
" 8	Brigg, Lincs—Lock Gates	Urban District Council	A. Atkinson, Commissioners' Engineer, Brigg, Lincs.
" 8	Warminster, Wilts—Reservoir	Urban District Council	Willcox & Raikes, 63 Temple Row, Birmingham.
" 12	South Shields—Tramways Lease	Urban District Council	J. M. Hayton, Town Clerk, Court Buildings, South Shields.
" 15	Manchester—Boiler	Urban District Council	City Architect, Town Hall Manchester.
" 17	Great Float, near Birkenhead—Purifiers	Urban District Council	I. H. Crowther, Engineer, Great Float, near Birkenhead.

Complete List of Contracts Open - continued.

DATE OF DELIVERY	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
ENGINEERING—cont.			
Mar. 17	Christchurch, New Zealand—Electrical Tramways	Government of New Zealand	Agent-General for New Zealand, Victoria Street, London.
April 25	Pietermaritzburg, Natal—Coaling Plant	Government of Natal	Agent-General for Natal, 26 Victoria Street, Westminster, S.W.
No date	London, W.—Kitchen Apparatus and Laundry Apparatus (Two Contracts).	Hammersmith Guardians	Giles, Gough & Trollope, 28 Craven Street, Charing Cross, W.C.
FURNITURE:			
Feb. 19	Leeds—Bedsteads, &c.	Sanitary Committee	R. E. Fox, Town Clerk, Leeds.
IRON AND STEEL:			
Feb. 18	Darlington—Pipes	Corporation	G. Winter, Borough Surveyor, Darlington.
" 18	Dublin—Steel Rails, &c.	Wicklow and Wexford Rly Co.	M. F. Keogh, Secretary, Westland Row Station, Dublin.
" 18	Rothwell, Yorks—Pipes	Urban District Council	J. T. Pears, Surveyor, Council Offices, Rothwell, near Leeds.
" 19	Leeds—Ironmongery	Sanitary Committee	R. E. Fox, Town Clerk, Leeds.
" 20	Harrogate—Pipes, &c.	Corporation	B. W. Dixon, 14 Albert Street Harrogate.
" 20	Stettin—Chains	Der Hafenbauinspector, Swinemunde.	Der Hafenbauinspector, Swinemunde.
" 20	Stettin—Iron and Steel	Der Hafenbauinspector, Swinemunde.	Der Hafenbauinspector, Swinemunde.
" 20	Northampton—Ironmongery	Corporation	A. Fidler, Borough Engineer, Northampton.
" 20	Plymouth—Iron, Steel, Bolts and Nuts, &c.	Corporation	J. Paton, Borough Surveyor, Municipal Offices, Plymouth.
" 22	London, N.—Iron and Steel	Hornsey U.D.C.	E. J. Lovegrove, Borough Engineer, Municipal Offices, Southwood Lane, Highgate, N.
" 22	London, N.W.—Ironmongery	St. Pancras Borough Council	W. N. Blair, Borough Engineer, Town Hall, St. Pancras, N.W.
" 23	Bromley, Kent—Ironmongery	Borough Council	F. H. Norman, Town Clerk, Municipal Offices, Bromley, Kent.
" 23	London, N.W.—Ironmongery, &c.	Willesden District Council	O. C. Robson, Engineer, Public Offices, Dyne Road, Kilburn, N.W.
" 25	London, N.—Iron and Steel	Islington Borough Council	W. F. Dewey, Town Clerk, Town Hall, Upper Street, N.
" 25	London, N.E.—Stores	Hackney Borough Council	Stores Clerk, Gasworks, Earlestown.
" 26	Salford—Iron and Steel	Tramways Committee	N. Scorgie, Borough Engineer, Town Hall, Hackney, N.E.
" 27	Earlestown, Lancs.—Ironmongery	Newton-in-Makerfield U.D.C.	Tramway General Offices, 32 Blackfriars Street, Salford.
" 29	Halifax—Stores	Corporation	J. Lord, Borough Engineer, Town Hall, Halifax.
" 29	Edinburgh—Roofs, &c.	Gas Commissioners	W. R. Herring, Chief Engineer, New Street Works, Edinburgh.
Mar. 1	Wolverhampton—Stores	Corporation	G. Green, Borough Engineer, Town Hall, Wolverhampton.
PAINTING AND PLUMBING:			
Feb. 20	Plymouth—Paint, Glass, &c.	Corporation	J. Paton, Borough Surveyor, Municipal Offices, Plymouth.
" 20	Northampton—Oils, Colours, &c.	Corporation	A. Fidler, Borough Engineer, Northampton.
" 22	London, N.W.—Paints and Oils	St. Pancras Borough Council	W. N. Blair, Borough Engineer, Town Hall, St. Pancras, N.W.
" 22	Southall, Middlesex—Oils	Urban District Council	R. Brown, Surveyor, Public Offices, Southall, Middlesex.
" 23	London, E.C.—Cleaning and Painting	Shoreditch Borough Council	Borough Surveyor, Town Hall, Old Street, E.C.
" 23	Bromley, Kent—Oils, Paints, &c.	Borough Council	F. H. Norman, Town Clerk, Municipal Offices, Bromley, Kent.
" 24	London E.C.—Painters' Colours, Varnishes, &c.	Metropolitan Asylums Board	T. D. Mann, Clerk, Board's Offices, Embankment, E.C.
" 25	Mickleover, Derby—Painting	County Asylum Committee	Mr. McWilliams, Engineer, County Asylum, Derby.
" 25	London, N.E.—Paints and Oils, Plumbers' Work, &c.	Hackney Borough Council	N. Scorgie, Borough Engineer, Town Hall, Hackney, N.E.
" 26	Salford—Paints and Oils	Tramways Committee	Tramway General Offices, 32 Blackfriars Street, Salford.
" 27	Earlestown, Lancs.—Painting Materials	Newton-in-Makerfield U.D.C.	Stores Clerk, Gasworks, Earlestown.
" 29	Manchester—Oils and Paints	Rivers Committee	Secretary, Rivers Department, Town Hall, Manchester.
Mar. 2	Fulham—Plumbers' Work, &c.	Borough Council	R. M. Prescott, Town Clerk, Town Hall, Fulham.
" 7	Dartford—Plumbing Work	Joint Hospitals Committee	R. Mardan, 26 Theobald's Road, London, W.C.
No date	Bethnal Green—Plumbing Work		Clerk of Works, Artizans' Dwellings, Burnley St., Bethnal Green.
ROADS AND CARTAGE:			
Feb. 18	Croydon—Materials, &c.	Rural District Council	E. J. Gowen, Clerk, Town Hall, Croydon.
" 18	Felixstowe—Materials	Walton U.D.C.	F. B. Jennings, Clerk, Town Hall, Felixstowe.
" 18	Merton, Surrey—Making-up	Croydon R.D.C.	R. M. Chart, Surveyor, Town Hall, Croydon.
" 18	Stockport—Street Works	Highways & Sewers Committee	J. Atkinson, Borough Surveyor, Stockport.
" 18	Wakefield—Private Street Works		City Surveyor, Town Hall, Wakefield.
" 18	East Retford—Granite	Corporation	J. D. Kennedy, Borough Surveyor, East Retford.
" 18	Southend-on-Sea—Making-up	Corporation	E. J. Eiford, Borough Surveyor, Southend-on-Sea.
" 18	Stokesley—Whinstone	Rural District Council	W. H. Dixon, District Surv., Kirkby-in-Cleveland, nr. Stokesley.
" 19	Sheffield—Granite	Highway & Sewerage Committee	C. F. Wike, City Surveyor, Town Hall, Sheffield.
" 19	Horncastle, Lincs—Granite and Slag	Rural District Council	J. E. Chatterton, Clerk, Union Offices, Horncastle.
" 19	Hardingstone, Northants—Materials	Rural District Council	J. Haviland, 2 St. Giles's Square, Northampton.
" 19	Hull—Street Extension	Corporation	A. E. White, City Engineer, Town Hall, Hull.
" 21	Boston, Lincs—Granite	Sibsey R.D.C.	J. M. Simpson, Clerk, Boston.
" 20	Burton upon-Trent—Road Materials	Corporation	G. T. Lynam, Borough Surveyor, Burton-upon-Trent.
" 20	Northampton—Granite, Kerb, Setts, &c.	Corporation	A. Fidler, Borough Engineer, Northampton.
" 20	Lewes—Materials, &c.	East Sussex County Council	F. J. Wood, County Surveyor, County Hall, Lewes.
" 22	Culham, Abingdon—Granite	Rural District Council	B. Challenor, 59 Stert Street, Abingdon.
" 22	London, N.—Road Materials, &c.	Hornsey U.D.C.	E. J. Lovegrove, Municipal Offices, Southwood Lane, Highgate, N.
" 22	Beckenham—Granite, &c.	Urban District Council	F. Stevens, Clerk, Council's Offices, Beckenham.
" 22	London, N.W.—Granite	St. Pancras Borough Council	W. N. Blair, Borough Surveyor, Town Hall, St. Pancras, N.W.
" 22	Widnes—Improvement Works	Corporation	J. S. Sinclair, Borough Surveyor, Town Hall, Widnes.
" 22	Wrexham, Denbighshire—Road Materials, &c.	County Council	E. W. Jones, District Surveyor, Wrexham.
" 22	Beverley—Stone	Rural District Council	E. Picker, Surveyor, Beverley.
" 22	Newark—Granite and Slag	Rural District Council	R. Oakes, junr., District Surveyor, Kirkgate, Newark.
" 22	Old Hill, Staffs—Road Stone	Rowley Regis U.D.C.	D. Wright, Clerk, Council Offices, Old Hill, Staffs.
" 22	Rawtenstall, Lancs—Materials	Corporation	Borough Surveyor, Municipal Offices, Rawtenstall.
" 22	London, W.—Watering Streets and Roads	St. Marylebone Borough Council	J. Wilson, Town Clerk, Town Hall, Marylebone Lane, Ox'ford St. W.
" 23	London, N.W.—Road Making and Paving Works	Willesden District Council	O. C. Robson, Engineer, Public Offices, Dyne Road, Kilburn, N.W.
" 23	London, N.W.—Gravel, Flints, &c.	Willesden District Council	O. C. Robson, Engineer, Public Offices, Dyne Road, Kilburn, N.W.
" 23	Audenshaw, Lancs—Road, &c.	Urban District Council	W. Clough, 2 Guide Lane, Audenshaw.
" 23	Bromley, Kent—Steam Road Rolling, Tar Paving, &c.	Borough Council	F. H. Norman, Town Clerk, Municipal Offices, Bromley, Kent.
" 23	Diss, Norfolk—Granite	Urban District Council	A. Cooper, Surveyor, The Terrace, Diss.
" 23	Gillingham, Kent—Road Materials, &c.	Corporation	F. C. Boucher, Town Clerk, Corporation Offices, Gillingham.
" 23	Whitehaven—Granite Setts	Town Council	Borough Surveyor, Town Hall, Whitehaven.
" 23	Acton W.—Making-up Roads, Kerbs, &c.	District Council	D. J. Ebbetts, Surveyor, Acton.
" 23	Walthamstow—Making-up Roads	Urban District Council	G. W. Holmes, Engineer, Town Hall, Walthamstow.
" 23	Southall, Middlesex—Gravel and Hoggin	Urban District Council	R. Brown, Surveyor, Public Offices, Southall, Middlesex.
" 24	London, N.—Granite	Wood Green U.D.C.	C. J. Gunyon, Surveyor, Town Hall, Wood Green, N.
" 24	Leigh, Lancs—Road Materials	Corporation	T. Hunter, Borough Surveyor, Bank Chambers, Leigh, Lancs.
" 25	Woolwich—Road Material	Borough Council	F. Sumner, Borough Engineer, Maxey Road, Plumstead.
" 25	Ramsgate—Making-up	Corporation	T. G. Taylor, Borough Surveyor, Albion House, Ramsgate.
" 25	London, N.—Granite	Islington Borough Council	W. F. Dewey, Town Clerk, Town Hall, Upper Street, N.
" 25	Walton-on-the-Naze—Making-up, &c.	Urban District Council	H. W. Gladwell, District Surveyor, Surveyor's Office, High Street, Walton-on-Naze.
" 25	London, N.E.—Materials	Hackney Borough Council	N. Scorgie, Borough Engineer, Town Hall, Hackney, N.E.
" 26	Salford—Materials	Tramways Committee	Tramway General Offices, 32 Blackfriars Street, Salford.
" 27	Chelmsford—Materials, &c.	Rural District Council	H. G. Warne, Surveyor, Avenue Chambers, Market Rd., Chelmsford.
" 27	Cockermouth—Road Widening	Rural District Council	J. P. Wilson, Engineer, Cockermouth.
" 27	Huntington—Road Materials	County Council	H. Leete, County Surveyor, Huntington.
" 27	Swinton, Lancs—Paving, &c.	Urban District Council	H. Entwistle, Surveyor, Council Offices, Swinton.
" 29	Hanwell, W.—Making-up Road	Urban District Council	P. J. Dennis, Clerk, Council Offices, Church Rd. West, Hanwell, W.
" 29	Halifax—Materials	Corporation	J. Lord, Borough Engineer, Town Hall, Halifax.
" 29	Worcester—Road Stone	Highways & Bridges Committee	J. H. Garrett, County Road Surveyor, Shirehall, Worcester.
" 29	York—Road Materials &c.	Corporation	A. Creer, City Surveyor, Guildhall, York.
Mar. 1	Bishop's Stortford—Paving	Urban District Council	R. S. Scott, 7 North Street, Bishop's Stortford.
" 1	Wolverhampton—Slag and Kerbs	Corporation	G. Green, Borough Engineer, Town Hall, Wolverhampton.
" 1	Middlesex—Broken Granite	County Council	H. T. Wakelam, County Engr., Middlesex Guildhall, Westminster.
" 1	Middlesex—Granite	County Council	H. T. Wakelam, County Engr., Middlesex Guildhall, Westminster.
" 1	Tottenham—Making-up Roads	Urban District Council	W. H. Prescott, 712 High Road, Tottenham.
" 2	Litherland, Lancs—Road and Passage Works	Urban District Council	A. H. Carter, 25 Selson Road, Litherland.
" 2	London, N.W.—Artificial Footway Paving	Hampstead Borough Council	Borough Engineer, Town Hall, Haverstock Hill, N.W.
" 2	Fulham—Broken Granite	Borough Council	J. M. Prescott, Town Clerk, Town Hall, Fulham.
" 3	Lutterworth—Granite, &c.	Monks Kirby R.D.C.	J. B. Holroyd, District Surveyor, Lutterworth.
" 14	Middlesex—Road Widening	County Council	H. T. Wakelam, County Engr., Middlesex Guildhall, Westminster.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
SANITARY:			
Feb. 18	Hemsworth, Yorks—Sewage Works	Rural District Council	T. H. Richardson, Engineer, Hemsworth.
" 19	Sheffield—Sewage Works	Highway & Sewerage Committee	C. F. Wike, City Surveyor, Town Hall, Sheffield.
" 20	Shardlow, Derby—Scavenging, &c.	Rural District Council	J. W. Newbold, Clerk, Becket Street, Derby.
" 20	Northampton—Stoneware Pipes, &c.	Corporation	A. Fidler, Borough Engineer, Northampton.
" 20	Plymouth—Sanitary Fluid	Corporation	J. Paton, Borough Surveyor, Municipal Offices, Plymouth.
" 20	Hornsea, near Hull—Sewer, &c.	Urban District Council	Surveyor, Public Rooms, Hornsea.
" 22	Mansfield—Scavenging	Mansfield Woodhouse U.D.C.	I. E. Alcock, Clerk, Leeming Street, Mansfield.
" 22	London, N.—Sewer and Drainage Work	Hornsey U.D.C.	E. J. Lovegrove, Municipal Offices, Southwood Lane, Highgate, N.
" 22	Beckenham—Disinfectants	Urban District Council	F. Stevens, Clerk, Council's Offices, Beckenham.
" 22	London, N.W.—Stoneware Pipes	St. Pancras Borough Council	W. N. Blair, Borough Surveyor, Town Hall, St. Pancras, N.W.
" 23	Southall, Middlesex—Disinfectants	Urban District Council	R. Brown, Surveyor, Public Offices, Southall, Middlesex.
" 23	Mortlake—Sewerage Works	Richmond Main Sewerage Board	W. Fairley, Engineer to Board, West Hall Road, Kew Gardens.
" 23	St. Helens, Lancs—Sewer	Health Committee	G. J. C. Broom, Borough Engineer, St. Helens, Lancs.
" 23	London, N.E.—Disinfectants	Willenden District Council	O. C. Robson, Surveyor, Public Offices, Dyne Road, Kilburn, N.W.
" 23	Middleton, Lancs—Disinfecting Powder	Corporation	C. H. Norton, Sanitary Inspector, Middleton, Lancs.
" 23	Wembley—Sewer	Urban District Council	C. R. W. Chapman, Surveyor, Public Offices, Wembley, N.W.
" 23	Whitehaven—Earthenware Pipes	Town Council	Borough Surveyor, Town Hall, Whitehaven.
" 24	London, N.—Stoneware Pipes	Wood Green U.D.C.	C. J. Gunyon, Surveyor, Town Hall, Wood Green, N.
" 25	London, N.—Sewers and Drains	Islington Borough Council	W. F. Dewey, Town Clerk, Town Hall, Upper Street, N.
" 25	Woolwich—Disinfectants	Borough Council	F. Sumner, Borough Engineer, Maxey Road, Plumstead.
" 25	London, N.E.—Stoneware Pipes, &c.	Hackney Borough Council	N. Scorgie, Borough Engineer, Town Hall, Hackney, N.E.
" 27	Beddington, Croydon—Scavenging	Croydon R.D.C.	E. J. Gowen, Clerk, Town Hall, Croydon.
" 27	Merton, Surrey—Scavenging	Croydon R.D.C.	E. J. Gowen, Clerk, Town Hall, Croydon.
" 27	Wallington, Croydon—Scavenging, &c.	Rural District Council	E. J. Gowen, Clerk, Town Hall, Croydon.
" 29	Halifax—Stone Pipes, &c.	Corporation	J. Lord, Borough Engineer, Town Hall, Halifax.
" 29	Wetherby, Yorks—Sewerage Works	Rural District Council	Richardson & Hartley, Engineers, East Parade Chambers, Leeds.
Mar. 1	Wolverhampton—Stoneware Pipes	Corporation	G. Green, Borough Engineer, Town Hall, Wolverhampton.
" 1	London, N.—Sewer	Hornsey Town Council	E. J. Lovegrove, Borough Surveyor, Municipal Offices, Southwood Lane, Highgate, N.
" 2	Bromley, Kent—Sewer, &c.	Rural District Council	A. Williams & Sons, 14 Victoria Street, Westminster, S.W.
" 2	Headcorn, Kent—Sewers, &c.	Hollingbourne R.D.C.	Fairbank & Son, Engineers, Lendal Chambers, York.
" 2	Fulham—Drain Pipes, &c.	Borough Council	R. M. Prescott, Town Clerk, Town Hall, Fulham.
" 2	London, N.W.—Disinfectants	Hampstead Borough Council	Borough Engineer, Town Hall, Haverstock Hill, N.W.
" 5	Coulsdon, Croydon—Scavenging, &c.	Croydon R.D.C.	E. J. Gowen, Clerk, Town Hall, Croydon.
TIMBER:			
Feb. 18	Dublin—Sleepers	Dublin, Wicklow & Wexford Railway Co.	M. F. Keogh, Secretary, Westland, Row Station, Dublin.
" 20	Northampton—Timber	Corporation	A. Fidler, Borough Engineer, Northampton.
" 20	Harrogate—Sleepers	Corporation	E. W. Dixon, 14 Albert Street, Harrogate.
" 22	London, N.W.—Timber	St. Pancras Borough Council	W. N. Blair, Borough Surveyor, Town Hall, St. Pancras, N.W.
" 23	Bromley, Kent—Timber	Borough Council	F. H. Norman, Town Clerk, Municipal Offices, Bromley, Kent.
" 24	London, E.C.—Timber	Metropolitan Asylums Board	T. D. Mann, Clerk, Board's Offices, Embankment, E.C.
" 25	Woolwich—Timber	Borough Council	F. Sumner, Borough Engineer, Maxey Road, Plumstead.
" 25	London, N.—Timber	Islington Borough Council	W. F. Dewey, Town Clerk, Town Hall, Upper Street, N.
" 25	London, N.E.—Timber	Hackney Borough Council	N. Scorgie, Borough Engineer, Town Hall, Hackney, N.E.
" 26	Salford—Timber	Tramways Committee	Tramway General Offices, 32 Blackfriars Street, Salford.
" 29	Halifax—Timber	Corporation	J. Lord, Borough Engineer, Town Hall, Halifax.
Mar. 2	London, N.W.—Timber	Hampstead Borough Council	Borough Engineer, Town Hall, Haverstock Hill, N.W.
" 2	Fulham—Timber	Borough Council	R. M. Prescott, Town Clerk, Town Hall, Fulham.

List of Competitions Open.

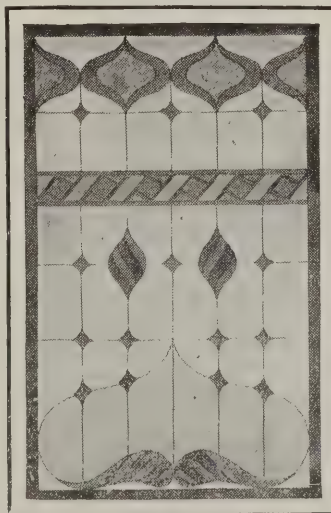
DATE OF DELIVERY.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	DEPOSIT REQUIRED FOR CONDITIONS, &c.	BY WHOM ADVERTISED.
Feb. 20	Bangor—Workmen's Houses	£21, £10 10s.	—	J. Gill, City Surveyor, Bangor.
Mar. 1	Ilkley—Free Library, &c.	£100, £50, £20.	£1 1s.	F. Hall, Clerk, Council Offices, Ilkley.
" 1	Stockton-on-Tees—Enlargement of Chancel	—	—	Holy Trinity Vicarage, Stockton-on-Tees.
" 31	St. Helens—Two Branch Public Libraries	£20, £40.	£1 1s.	W. H. Andrew, Town Clerk, Town Hall, St. Helens.
" 31	Vienna—Machinery to Lift Boats on Canal	100,000, 75,000 & 50,000 kronen.	—	Austro-Hungarian Consulate-General, 22 Laurence Pountney Lane, E.C.
April 6	Perth—Hospital	£31 10s., £21, £10 10s.	—	J. Begg, Town Clerk, Perth.
" 8	Malvern—Library	£30, £20, £10.	—	H. L. Whatley, Clerk, Council Offices, Malvern.
" 30	Newcastle-upon-Tyne—Grammar School	£100, £50, £25.	£1 1s.	H. J. Criddle, 2 Collingwood Street, Newcastle-upon-Tyne.
May 9	Barnet—Hospital	—	—	C. D. Byfield, 16 High Street, Barnet.

Trade and Craft.

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ARCHITECT'S ASSISTANT (23) desires Engagement, London or South of England. Five years' experience. Neat draughtsman, designs from sketches, details, perspective, &c. Salary 30s.—ALCWN A. JONES, Sunnyside, Dudley. 175

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GENERAL OR WORKING FOREMAN seeks ENGAGEMENT. London and Provincial experience. Abstainer. Trade, carpenter. Age 46. Wages moderate.—H., 28, Glengall Road, Old Kent Road. 188

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JUNIOR CLERK wants SITUATION in builder's office. Age 19. Understands general office routine.—Apply, Lockwood, "Llanberis," Westgate-on-Sea. 181

MACHINIST (all-round hand) seeks situation on spindle, French, or block four-cutter, and others if required. Thoroughly experienced in making cutters and sharpening saws.—Address, MACHINIST, 78, Ifield Road, West Brompton. 218

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Paper on "WARMING AND VENTILATION," by DAVID M. NESBIT, M.I.Mech.E.

THE ARCHITECTURAL ASSOCIATION.

February 19th, Ordinary General Meeting, at No. 9, Conduit Street, W., at 7.30 p.m. Paper by Mr. W. HENRY WHITE, F.R.I.B.A., on "Corner Houses." Illustrated with Lantern Views.

February 20th, Third Spring Visit, to Holy Trinity Church, Prince Consort Road, Kensington Gore (back of Royal Albert Hall), by kind permission of Mr. G. F. Bodley, R.A. Members to meet at the church at 2.30 p.m. A visit will afterwards be paid to the Royal College of Science, Kensington, by kind permission of Mr. Aston Webb, R.A.

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Instructions.—Advertisers must furnish their names and full addresses, which will not be published; and a number is assigned to each for identification. All communications will be treated in the strictest confidence. Abbreviations employed:—s., salary required; ex., experience; refs., references; yrs., years.

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- 181.—JUNIOR CLERK, age 19, office routine, requires job in Builder's office.

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Maidenhead.—For the erection of a free library. Messrs. Arthur McKewan & G. H. V. Cale, joint architects, Birmingham. Quantities by Mr. George Hackford, Queen Anne's Gate, Westminster:—
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 Bissley 5,359 10
 J. K. Cooper & Sons 5,292 0
 Silver & Sons 5,091 0
 Edwards 5,057 0
 Creed 4,921 0
 Theaker 4,781 14
 Cox & Sons 4,698 0
 * Provisionally accepted. [All of Maidenhead.]

Maxstoke (Warwickshire).—For the erection of an entrance lodge and a coachman's cottage at Maxstoke Castle, near Coleshill, Warwickshire, for Mr. Beaumont T. Fetherston. Mr. Charles M. C. Armstrong, architect, 5, High Street, Warwick:—
 E. A. Isherwood, Berkswell £1,415
 G. F. Smith & Sons, Leamington 1,434
 Isaac Langley, Tyburn 1,424
 Kelley & Son, Foleshill 1,340
 C. Hope, jr., Berkswell 1,300
 Frank Davis, Moseley 1,275
 * Provisionally accepted.

Midsomer Norton.—For alterations and additions to the town hall, for the Urban District Council. Mr. William F. Bird, C.E., district engineer and surveyor, Market Hall, Midsomer Norton, Somerset. Quantities by the engineer:—
 Wills & Sons, Spring Gardens, Bath .. £966 0
 W. J. Heal, High Littleton, Bristol .. 840 10
 W. A. Catley, High Street Midsomer Norton .. 841 0
 * Accepted. [Engineer's estimate, £831.]

Moss (Yorks).—For the erection of chapel, for the Rev. M. Limon, M.A., on behalf of the trustees. Mr. E. H. Ballan, architect, 19 and 20, Baxter Gate, Doncaster. Quantities by Mr. Hoffman Wood, 14, Park Square, Leeds:—
 Dennis, Gill & Son, Doncaster £477
 W. Reynolds, Askrum 430
 Sprakes & Sons 360
 * Accepted.

Peterborough.—For the erection of business premises at 4, Narrow Bridge Street, for Mr. Alfred Hepworth, of Leeds. Mr. E. Hall Ballan, architect, 19 and 20, Baxter Gate, Doncaster. Quantities by Mr. Hoffman Wood, 14, Park Square, Leeds:—
 H. Hammond, Peterborough £975 11 6
 J. Cracknell 929 0 0
 T. Furnis 901 18 6
 Pringle & Fardell, Leicester 901 9 9
 Sprakes & Sons, Doncaster 860 0 0
 D. Gray, Peterborough 806 14 9½
 Ernest W. Beech 735 14 7
 * Accepted.

Oldbury.—For the construction of detritus and screening chambers, storage-tanks and pump well, and the erection of a pumping station, office and stores, and other works in connection with the sewerage of Warley, for the Oldbury Urban District Council. Mr. J. T. Eays, M.I.C.E., engineer, 39, Corporation Street, Birmingham:—
 J. Mackay, Smethwick £1,998 16 2
 E. Boore, Smethwick 1,017 12 5
 T. Bagnall & Sons, Oldbury 1,705 14 3
 H. Dorsey & Co., Cradley Heath 1,633 2 3
 J. Dallow & Sons, Birmingham 1,543 10 0
 G. E. Jackson, Oldbury 1,481 4 5
 E. Hadley & Sons, Old Hill, Staffordshire 1,381 6 6
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Padstow.—For the erection of Wesleyan Sunday School and additions to Wesleyan Church. Messrs. J. Ennor & Son, architects, Newquay, Cornwall:—
 Derrick & Warne, Padstow £1,540 0
 T. Williams & Son, Wadebridge 1,457 10
 M. Pascoe & Son, Wadebridge 1,227 0
 [To be reduced.]

Purley.—Accepted for the erection of two houses in Brighton Road. Mr. Frank Winsor, architect, 1, High Street, Croydon:—
 Pearson & Co., Park Street, Croydon .. £1,470

Purley (Surrey).—For the erection of residence in Central Road, for Mr. J. W. Forrester. Mr. J. Halsted Waterworth, architect and surveyor, 281a, Queen's Road, New Cross Gate, S.E., and Welling, Kent:—
 Hanscomb & Smith £2,761
 S. R. Best 2,175
 D. Waller 1,949
 W. H. Baldwin 1,915
 T. Vaughan & Sons, Caterham Valley .. 1,718
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Ramsgate.—For the erection of the new Carnegie library, Clarendon Gardens, Ramsgate, for the Corporation:—
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 D. Parkins, Luton 7,250 0 0
 Gann & Co., Whitstable 7,065 0 0
 J. H. Forewalk 7,058 19 2
 E. J. Newby 6,937 0 0
 W. I. Adcock, Dover 6,942 4 0
 H. Kent, Lewisham 6,950 0 0

Foster & Dicksee, London £6,838 0 0
 T. T. Denne, Upper Walmer, Kent .. 6,769 0 0
 G. Browning, Canterbury 6,636 0 0
 F. G. Minter, Putney, London 6,597 0 0
 Strange & Sons, Tunbridge Wells .. 6,561 0 0
 A. E. Goodbourn 6,516 4 9
 W. W. Martin 6,436 0 0
 Huckell & Grimby 6,270 0 0
 G. H. Denne & Son, Deal 6,190 0 0
 [Rest of Ramsgate.]

South Shields.—For the erection of biscuit factory and warehouse, caretaker's house, cooperage, washingsheds, &c., at Tyne Dock, for Mr. H. Wright. Mr. F. Rennoldson, architect, 37, King Street, South Shields. Quantities by the architect:—
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 T. Lumsden 16,920 0 0
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 J. C. Nichol 14,766 10 7
 S. F. Davidson 14,584 0 0
 W. Forster 14,320 0 0
 S. Sherriff & Sons 14,276 8 4
 * Accepted.

Presentations to an Architect.—Mr. George Bennett Mitchell, architect, of Union Street, Aberdeen, who for more than sixteen years has been architect on the estates managed by Messrs. Davidson and Garden, advocates, Aberdeen, and who has now started business on his own account, was presented last week with a silver salver and tea and coffee service, and an oak bookcase, by the tradesmen of Aberdeen and Inverurie.

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(See displayed Advt. in issue for January 27, p. ii.)

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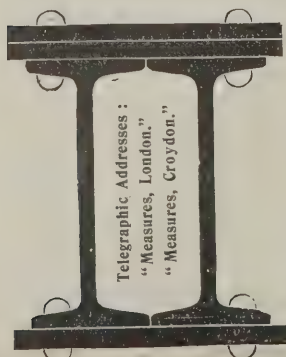
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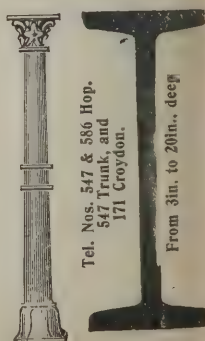
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THE BUILDERS' JOURNAL

AND ARCHITECTURAL RECORD.

February 24, 1904. Vol. 19. No. 472.

6, Great New Street, Fetter Lane, E.C.

Summary.

In a paper which he read before the Architectural Association last Friday, Mr. W. Henry White, F.R.I.B.A., said that where the side street was wide and quiet, he thought it desirable in the case of a corner house attached to another house that the central hall and staircase type be adopted. This allowed the rooms to be planned to face the street. There was a great danger in unnecessarily elaborating the angle, which frequently had a "stuck on" effect, instead of being an integral part of the design. (Page 90.)

A Calvary cross may be had direct from Carrara as cheap, if not cheaper, than the rough block of marble can be bought here! (Page 89.)

The position of clerk of works under the Admiralty is no sinecure—the duties are many and various, but competent men are assured in their position. (Page 89.)

Mr. David M. Nesbit, in a paper on "Warming and Ventilation" which he read before the Society of Architects last Thursday, said that, after the great success of the overhead plenum system at the Royal Dublin Society lecture-theatre, it had been decided to carry out the same plan at the Belfast City Hall, Cardiff Town Hall, Walsall Town Hall and Deptford Town Hall. He had no hesitation in saying that when these installations were completed they would rank as the best of their kind in the Kingdom. In all of them low-pressure steam, worked at atmospheric pressure, was being used. (Page 94.)

A contributor observes that it is surprising iron pipes are not more commonly used for drains and sewers. They would be no more expensive (if as much) except in first cost, because the stoneware drain does not last in a thoroughly water-tight and air-tight condition for many years—sometimes not for many months. (Page 93.)

Mr. C. H. Reilly has been appointed to the Roscoe Chair of Architecture at Liverpool University, in succession to Prof. F. M. Simpson. (Page 96.)

New drainage by-laws have been introduced by the London County Council whereby they require, in duplicate, complete plans, sections and elevations of every floor of a building to be submitted not only in the case of new systems of drainage but any alteration of an existing system. These by-laws are protested against by the Royal Institute of British Architects. (Page 96.)

Royal Academy Exhibition, 1904.

The sending-in day for architectural works at this year's Royal Academy Exhibition is Friday, March 25th. As in previous years, we shall be pleased to deliver any works free of charge, provided they are sent to our offices, 6, Great New Street, Fetter Lane, not later than 2 p.m. on the above date, and to make reproductions of such as we wish. We would once more urge upon architects the desirability of sending their frames as early as possible.

The Mixture.

At last Friday's meeting of the Architectural Association Mr. White expressed a view with which we are very much in sympathy, namely, that architects, and more especially students, would do well to pick up the thread of English architecture which remained unbroken to the end of the eighteenth century, and to avoid that pitfall of modern ideas—originality. We do not seem to be content with a straightforward piece of design, carried out in one material and one manner, but must for ever be playing some strange freak on the building, by breaking off a cornice without any sane reason for doing so, or twisting a window into the roof, putting a bit of half-timber here and some tiles there and a little piece of rough-cast somewhere else; with the result that we get a new effect certainly, but not at all a desirable one, as there is nothing coherent about it, though some of our friends on the other side of the Atlantic, imbued with high art proclivities, immediately pounce on some such work and revel in what they are pleased to call its freshness and variety, its individuality. And then some miserable specimen of an architect turns to a man like Norman Shaw and monkeys his work in the feeblest way; while architects even of some note make an equally foolish exhibition of themselves, though they enjoy the advantage of richer clients and consequently a greater opportunity for display (which covers a multitude of faults). We have said before that genius can be left alone to work out its own salvation: it is the rank and file that needs to be looked after—the average architects up and down the country: these are the people who go in for all the mixtures of the moment, and it is to them especially we would commend the adoption of a quieter method, not necessarily the dull monotony of the last of Georgian work, but the carrying on of the best of that English architecture which was current when the first George arrived at Greenwich from his beloved Hanover.

The Farnese Palace.

For many years the celebrated Farnese Palace in Rome has been occupied by the French Government, and it has now been purchased by them from the representatives of the Kings of Naples, into whose hands it came by inheritance from the Farnese family. The purchase price is said to be £120,000. Situated like many other Roman palaces in a very unsavoury quarter of the city, the Farnese palace was built about 1540, from designs by the younger Sangallo, out of materials taken partly from the Colosseum and partly from the theatre of Marcellus. After the death of Sangallo it was continued by

Michael Angelo, who designed the cornice and the cortile.

Berwick Bridge.

A REPORT has now been made by Messrs. Read & Waring, civil engineers, of London, on the stability of the old bridge that crosses the Tweed at Berwick. From this we learn that though the piers are in good condition the mortar in the cutwaters has been washed away to such an extent that many of the stones can be removed by hand, besides which there are vertical cracks which tend to separate the cutwaters from the body of the piers. The arches, with some exceptions, appear to be sound; four of them, however, have serious longitudinal cracks. It will be necessary to take down the inner rings on the west side and to cut out the decayed stones in otherwise sound arches. Masonry in the spandrels will also need to be removed and rebuilt in cement-mortar, as well as a portion of the parapet walls: all of which will cost £5,430. The work is urgently needed. The manner in which it is proposed to be done seems satisfactory, as the character of the bridge is not to be altered.

The Discovery at the Louvre.

TOWARDS the end of last year it will be remembered that M. Redon announced the discovery of a fine basement to the Louvre, buried 26ft. underground. It appears that the original elevations of the building extended to the bottom of the moat which once surrounded it; but a pamphlet, published in 1650, says that such vast quantities of garbage and refuse had been thrown into the moat from neighbouring houses, and from the windows of the Louvre itself, as to fill it completely. Attempts were made, each summer, to clean it out, and on these occasions the court was obliged to leave the palace until the work was over. Even then the solid refuse accumulated until, when Napoleon took possession of the palace, he found that the simplest thing to do to make the place presentable was to fill the ditch with earth, level it off and plant it. Since then it has remained in the condition in which he left it; and the authorities have decided that, in view of the expense of excavating the moat, and the probability that further work would be found necessary to put the ancient stonemasonry in order, it is best not to disturb the present state of affairs.

"Specification No. 7."

WE are gratified to state that on the first day of issue 1,760 copies of "Specification No. 7" were sold, altogether a phenomenal sale for a technical book, and an eloquent testimony to its excellence. The price was formerly 5s., but with this number it is reduced to 2s. 6d.

GRISSELL GOLD MEDAL DESIGN.

WE publish this week the Grissell Gold Medal design for the timber termination to a tower—the constructional competition of the Institute—won by Mr. J. William Hepburn, of Glasgow, now residing in London. The original drawings are highly coloured, some of the work being picked out in bright red. The design was undoubtedly the best of the fourteen sent in. Mr. J. S. Gibson, in his criticism of the drawings at the Institute, spoke of it as being excellent, clever in conception, splendidly drawn and carefully worked out in all its details.

Correspondence.

Granite and Marble: Home and Foreign Supplies.

To the Editor of THE BUILDERS' JOURNAL.

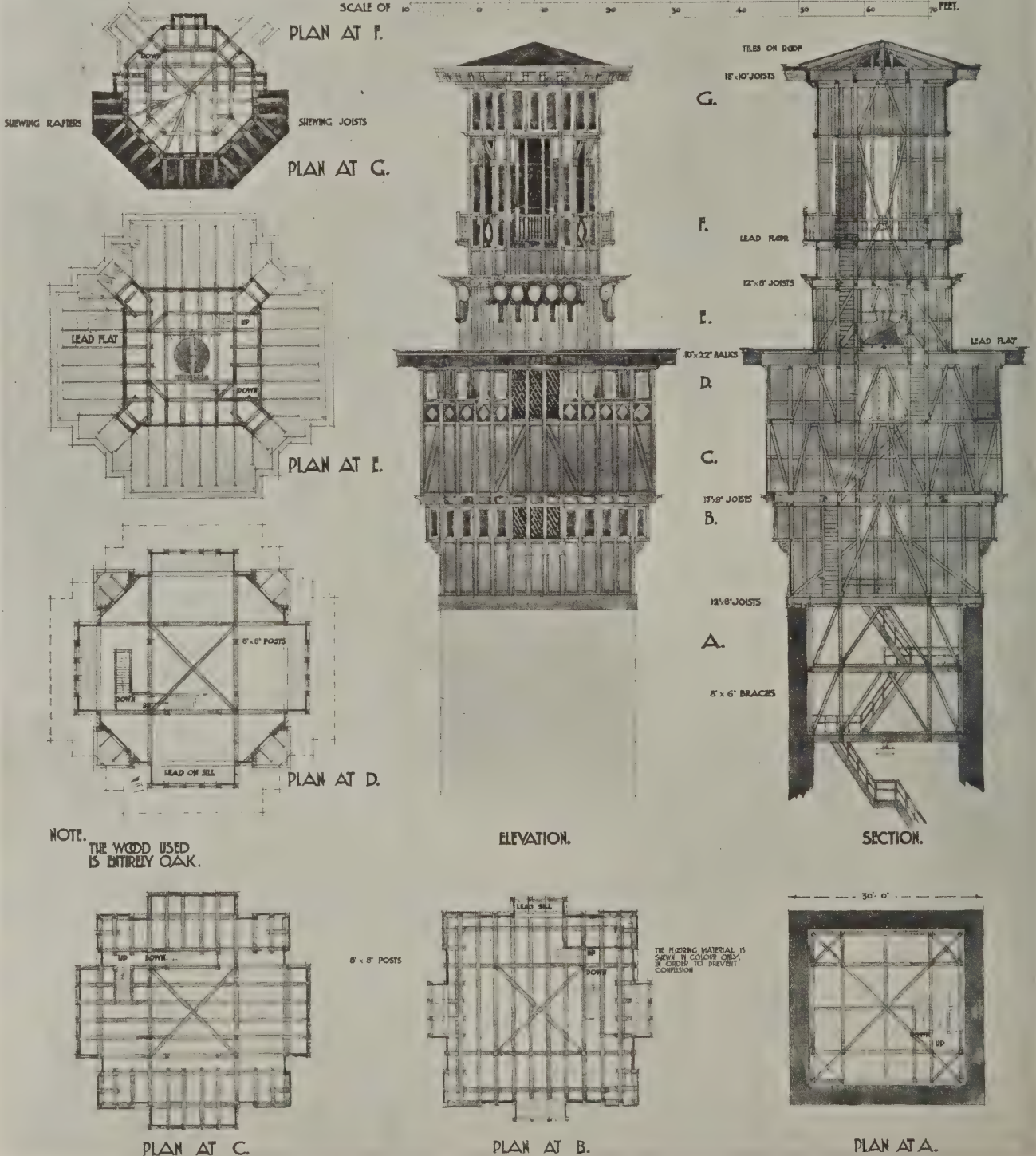
EXETER.

SIR,—Mr. Powis Bale may be right in assuming there is "something rotten in the state of Denmark" now that he has discovered, from practical experience, that Ireland's beautiful marbles and granites cannot compete with any degree of financial success against the products of Italy, Belgium and Norway. But the "rotteness" goes much further than Ireland. England at the

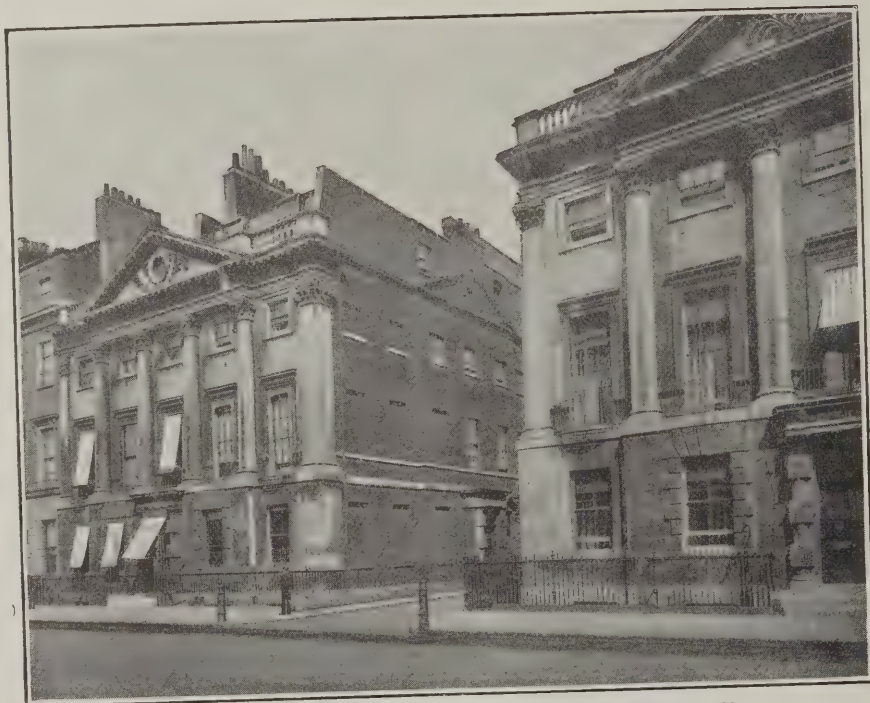
present time cannot touch any one of those respective countries in regard to economy of production, and hence in proportionately low prices. Italy swamps us with marble monumental work; Norway delivers granite cheaper than we can contrive to raise it almost from beneath our feet; whilst Belgium produces at—to us—impossible prices coloured marbles of great variety which bear comparison with the best that Devon, Derbyshire or Ireland can yield. The reason is that in each of these countries the toilers work for half the money (often less than that!) than does the English craftsman; whilst their employers contrive to secure marvellously cheap rates of freight, by which they trans-

GRISSELL GOLD MEDAL, R. I. B. A. 1903-1904.
DESIGN FOR THE TIMBER TERMINATION TO A TOWER.

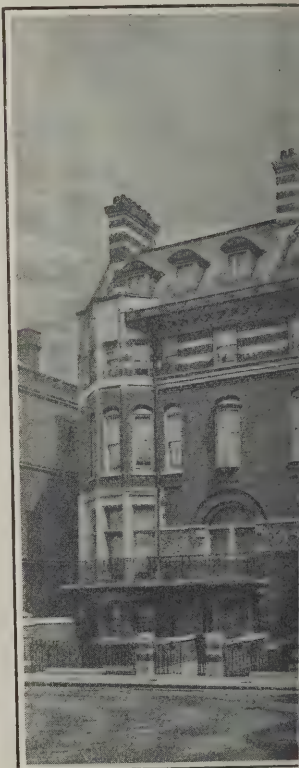
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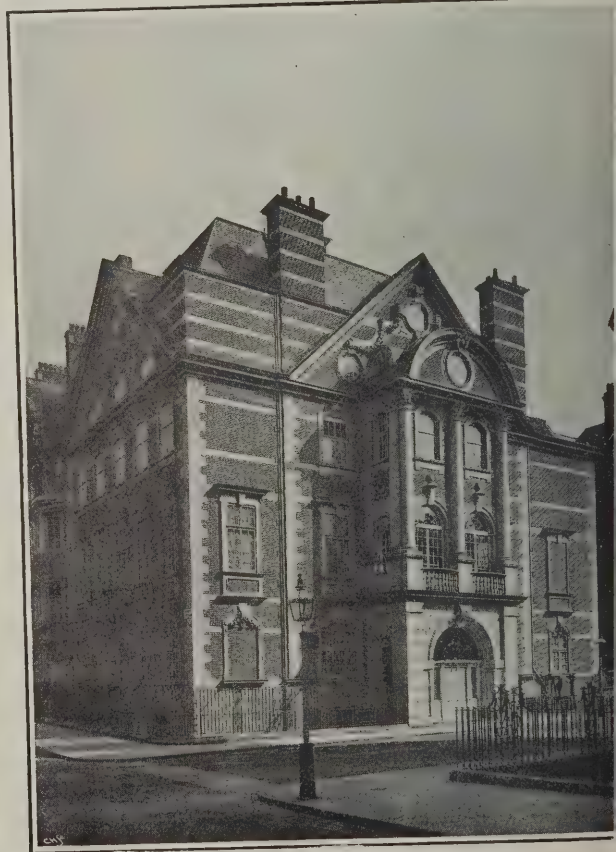
HOUSES IN CAVENDISH SQUARE, LONDON, W.; ORIGINALLY LODGES TO PROPOSED MANSION
 FOR THE DUKE OF CHANDOS. (JAMES, OF GREENWICH ARCHITECT.)



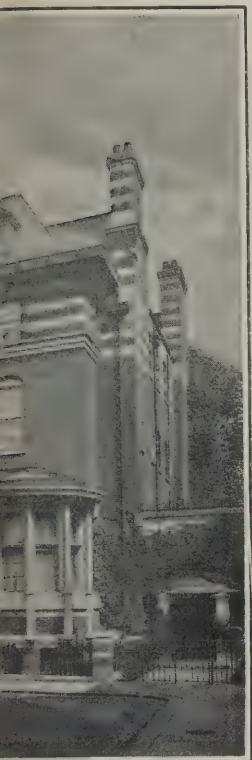
NOS. 10 AND 12, PALACE
 J. M. MA



NO. 180, QUEEN'S GATE, LONDON, W.
 R. NORMAN SHAW, R.A., ARCHITECT.



LORD WINDSOR'S HOUSE, 54, MOUNT STREET, LONDON, W.
 FAIRFAX B. WADE, F.R.I.B.A. ARCHITECT.



BAYSWATER, LONDON, W.
ARCHITECT.



PUBLIC-HOUSE AND SHOP, BEDFORD PARK, LONDON, W.
R. NORMAN SHAW, R.A. ARCHITECT.



NOS. 18 AND 19, COLLINGHAM GARDENS, EARL'S COURT, LONDON, S.W.
ERNEST GEORGE AND PETO, ARCHITECTS.



NO. 2, PALACE COURT, BAYSWATER, LONDON, W.
W. FLOCKHART, F.R.I.B.A., ARCHITECT.

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port their finished products into this country, without paying a farthing duty.

Mr. Powis Bale is, I think, slightly in error in believing that marbles and granite are imported to this country to any extent from Guernsey—that island possesses no marble whatever: it is in reality a great granite wedge jutting out of the sea, with the thin end towards England. This granite is blue and grey, the red variety (much like that now being quarried upon the French shore at Perros-Guirec, near Lannion) being excellent but comparatively rare. The blue is admirable for road purposes, and as its crushing strength is said to be greater than that of any other granite it is largely exported for macadamizing purposes. Paving and kerbs are also exported in considerable quantity, but Guernsey granite in blocks is rarely seen in this country. The difficulty is with the freight. Granite in block is bad to load and discharge, and it knocks the boats about.

Whilst touching on the matter of freight one may notice, passingly, how very much our national industries in marble and granite suffer in competition with the products in these materials from other countries. Mr. Arthur Lee, of Bristol, in his excellent little handbook entitled "Marble and Marble Workers" (1888), says: "It is much to be regretted that the bulk of the coloured marbles used in England give no employment to home labour. One of the great reasons is that British railway charges effectually destroy all chance of largely developing the home industry. The iniquitous system by which the railway companies favour the foreigner has worked with full effect upon the marble trade. British marbles, sawn in slabs, and carried from London to Bristol, are charged 27s. 6d. a ton; foreign marble slabs between the same places 20s. The rate of carriage for a rough block of marble between London and Bristol (118½ miles) is 12s. 6d. a ton; in Belgium the same block would be conveyed 124 miles for 4s. 5d. a ton. This is a grievance which is greatly felt and bitterly resented by British marble workers, who, alas, have found no remedy."

To such an extent during the last few years has the marble monumental trade been affected by the Carrara invasion that it is difficult to-day to find a really decent monument of that material in any English statuary's yard that has not been wholly and solely made in Italy. It is a well-known fact that a three-step Calvary cross all ready for erection, and suitable for any middle-class person's grave, may be obtained direct from there quite as cheap, if not rather cheaper, than a block of rough marble can be bought in this country large enough to make the job out of!—Yours truly,

HARRY HEMS.

Clerk of Works, Admiralty.

SIR,—Referring to the enquiry of "H. R. T." (Northampton) on p. 72 of your issue for February 10th, I might say that there is such a position as clerk of works under the Admiralty, the post being almost invariably filled from the ranks of the foremen of works. These officers are under the Works Department of the Admiralty, and are appointed to take charge of a whole district of coast-guard and similar buildings, estimating for repairs, maintenance and additions, and supervizing the proper carrying out of same under the direction of the civil engineer in charge of the district. The vacancies are extremely rare, and your correspondent would probably have to wait ten years or more before obtaining an appointment direct. Should he strongly desire to become an Admiralty official in the Works Department he should send his name, age, address, qualifications, works of which he has had charge as a general foreman and not more than three testimonials to the Director of Works (Colonel Raban), Admiralty, London,



THE GRISSEL GOLD MEDAL DESIGN FOR THE TIMBER TERMINATION TO A TOWER,
BY J. W. HEPBURN.

S.W., asking that his name be inserted on the list of applicants as foremen of works, and getting any friends he may have in the districts in which Admiralty works are carried on to keep him informed of any vacancies as they occur, and then pushing his claim by writing a reminder to the Department. In the meantime he should become thoroughly well up in every branch of his trade, as every day he will be asked his opinion on some such question as the efficiency of a certain hot-water apparatus or whether he considers it will be possible to save a percentage on certain work—in fact, the position is no sinecure, and anyone thinking he was in for a soft job would be quickly undeceived. But I have proved that those who do their duty well in all respects need not fear losing their position, the engineers with whom I have come in contact being highly qualified and knowing a good man when they find one.—Yours truly,

INFORMATION.

To the Editor of 'THE BUILDERS' JOURNAL'.
DEVONPORT.

SIR,—When Professor Adams says that he is "under the impression that the work is done by temporary assistant civil engineers" it seems to me that something further needs to be said in justice to the latter. Their duties are more to be compared to those of a resident engineer or the civil engineers who form the staff of large contracting firms. In more than one instance I know of, their responsibility has been that of a whole district, with clerks of works, foremen, storehousemen, workmen, &c., under them. A list of applicants for the post of clerk of works is kept at the office of the Director of Works of the Navy, Northumberland Avenue. Applications can be made in the usual way. Selections are made from this list by the civil engineer in charge of the district. Your correspondent will doubtless be glad to know this.—Yours truly,

W. M.

ARCHITECTURAL ASSOCIATION.

MR. W. HENRY WHITE ON CORNER HOUSES.

A MEETING of the Architectural Association was held at 9, Conduit Street, W., on Friday evening last, the chair being occupied by Mr. Henry T. Hare.

The following were elected members:—Messrs. F. J. Whittingham, C. Simpson, T. O. Foster, G. F. Lake, L. M. Gotch, H. V. German, J. H. German, D. J. Campkin and T. L. Pearce. The president announced the following additional donations to the New Premises Fund:—

Proprietors of THE BUILDERS' JOURNAL, THE ARCHITECTURAL REVIEW and SPECIFICATION	£	s.	d.
C. Stanley Peach	10	10	0
W. Morrison	10	10	0
J. D. Crace	5	5	0
W. H. Lever	5	0	0
F. Adams Smith	2	2	0
Horace Porter	2	2	0
T. S. Attlee	1	1	0
L. V. Hunt	1	1	0
W. J. Kemp	1	1	0
C. H. M. Mileham	1	1	0
J. B. Pinchbeck	1	1	0
A. H. Roe	1	1	0

Mr. W. Henry White, F.R.I.B.A., then read a paper on "Corner Houses," illustrated by a large number of lantern slides. Views were first shown of the "Classic" treatment, such as Ralph Allen's town house at Bath (illustrated on this page), and then followed examples from the Gothic Revival period, such as Street's idea of a corner house; afterwards a large collection of work by Norman Shaw, Ernest George, T. G. Jackson and other modern men was passed in review on the screen (a representative selection from these is reproduced in our centre plates this week).

Mr. White said:—A corner plot frequently increases the difficulty of planning a well-

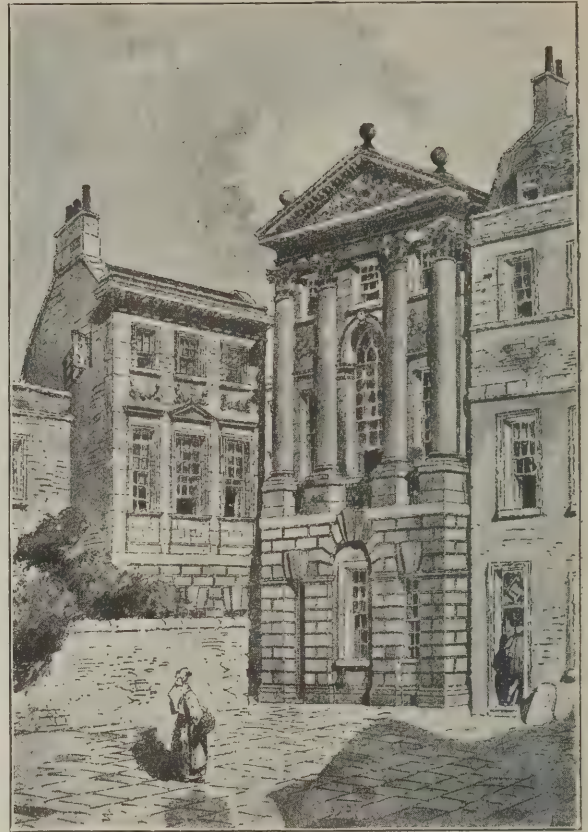
arranged house—so many fresh elements are added to the ordinary problem, and there are possibly a greater number of solutions to be considered before the best is arrived at. But if greater difficulties are introduced, the subject is more interesting and provides a wider scope for the architect's powers; indeed, the very awkwardness and difficulties of a site frequently enable the clever designer to produce a quaint and interesting piece of work. The disposition of the principal rooms, owing to questions of aspect, may now become of vital importance, and, as in the built-in house, the position of the entrance, hall and staircase will materially help to settle the type of plan to be adopted. If the site is situated with one side to a principal street and the other to an unimportant street the client will, in most cases, expect the entrance to be in the principal street, and this one point will often hamper the development of the whole plan.

Where the side street is wide and quiet, I think it is desirable in the case of a corner house attached to another house that the central hall and staircase type be adopted. This allows the rooms to be planned to face the street, but it is impossible to lay down rules for the development of corner sites, as each presents a different problem to solve and each requires special consideration.

I strongly recommend students to collect, examine and criticize as many published plans and designs as possible, for by so doing they will learn a great deal, and also when possible to make a point of seeing the building illustrated, to study its position in regard to its surroundings and the points of the compass, and, if it occurs to you after mature consideration that the problem might have been solved in a better manner, to jot down notes for future guidance.

In regard to the external features of corner houses, here I think a little may be said as to a few things to be borne in mind whatever may be the style or motive we are working in. The danger which appears to be most imminent is the unnecessary elaboration of the angle, which is frequently treated as a thing apart from the general design and has a "stuck on" effect. If it be determined to give prominence to the angle treatment, care should be taken to still keep it as an integral part of the design.

Among the buildings shown by the lantern views on the screen it will be noticed that very little similarity or unity of design exists, each architect appearing to have been actuated by a different motive as to the design. Although we must admit that individuality is charming, I cannot help



RALPH ALLEN'S TOWN HOUSE AT BATH.

wondering whether this struggle for novelty is good for English architecture, good for the training of public taste, however charming each individual piece may appear to us.

When no two men in a profession seem to show any consecutive train of thought (as disclosed by their work), and produce such a variety of design with no homogeneity of feeling existing between their buildings, how can we expect the public to learn to distinguish between good and bad?

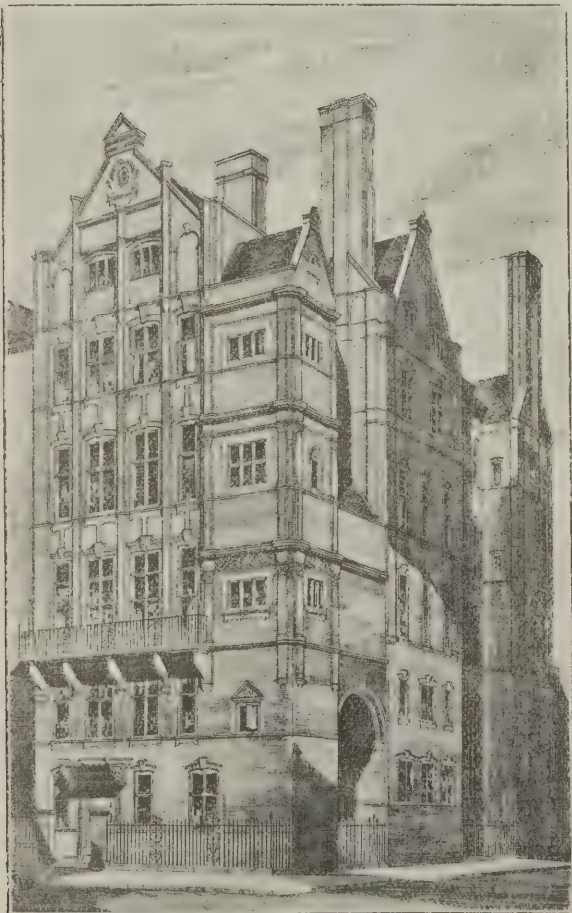
I cannot help feeling that, so long as our students are allowed to work upon individual ideas, so long will this heterogeneous work continue; and while such differences of style and aim exist between the masters I fear our students cannot hope to develop a vernacular style.

Municipal architecture, it seems to me, has, during the past few years, in the hands of our ablest men, made greater strides towards a development of our own vernacular style than house architecture.

This may be, and I think is, the result of competition, where each competitor, by striving for success, studies more closely the work of the best men of the day, and that work, I think you will agree with me, is a distinct carrying on and development of the eighteenth-century work: but there is no such motive with house architecture, where each man is left to his own devices and his client's instructions.

May we not say that the old work was more consistent as to style? It was a gradual development from one period to another right down to the end of the eighteenth century. It was always suited to the requirements of the age and the materials used, and possessed a breadth of treatment, from the cottage to the mansion, the village church to the noblest cathedral, far and away beyond that of the average work of to-day.

I hope you will not think I am advocating a deadly monotony in design, or that I think it advisable to slavishly copy old work. Careful study of the latter will show how infinitely full of variety it was during any



HOUSE IN CADOGAN SQUARE, CHELSEA, LONDON, S.W.
R. NORMAN SHAW, R.A., ARCHITECT.

period of English architecture down to the end of the eighteenth century; at the same time, it was consistent in design and motive.

In the paper on "Town Houses" which I read before the Architectural Association last session I pointed out how the work of Mr. Norman Shaw had developed, until, at the close of his professional life he got back to a true development of our own vernacular style, as instanced by the house at Queen's Gate and his splendid work, "Chesters." Now, supposing Mr. Norman Shaw had commenced his career with this period of work, it is interesting to speculate how he might have developed it; and I submit for our Committee's consideration whether, in our classes of design, if the students were asked to submit designs based upon our own vernacular work, instead of being left to bring in more or less crude ideas, the essence of which seems to be to strike out something novel, such a course might not be productive of good and lead to more thoughtful and consistent work than is now the case. I do not believe this course would cramp the man of genius, and it ought to improve the work of the average student.

A communication on the subject from Prof. Beresford Pite was also read. Professor Pite said it was very true that a review of recent house architecture displayed extraordinary variety of conception and ideal. It might appear to a foreigner that each architect here was striving for his own hand in the struggle for originality, and was regardless of any consistency, and probably also without the intellectual trammels of a sound education. Such criticism was not easy to resist. Intimate acquaintance, such as was possessed by every architect or student who felt drawn to the building papers on the publishing days with a zest not felt on other days, however, showed that there was method in the madness, and it was in our inability to think for ourselves, independently and academically, that our liability to pursue so eagerly every fashion or phase of a master or type found such unregulated scope. There was a personal element in published current designs from which we cannot dissociate ourselves, and we follow leaders as inevitably as Court dressmakers. He did not know that it was any good to regret this tendency in the absence of a better one. It was a sign of the age. Time was not taken to study and criticize design. The facility in draughtsmanship which was attainable in a pupil's second or third year was often his full equipment for the practice of design, and he, no wonder, hungrily devours the notions of modern originators, assimilates and evolves reproductions without at all realizing that such designs were not in any sense serious architecture, worthy of himself or of his art. The return to tradition, he thought, was practically impossible—we are our own tradition, and the Gothic Revival was as much a tradition to us as the Renaissance was to Elizabethan and Jacobean designers. The violent progress of architecture during the past century had rendered useless the traditions and design of the old masons and carpenters in whose hands much of the house architecture of the pre-Victorian period was practised. These traditions of workmanship were, he feared, as dead as Queen Anne herself, and we should not be understood by the common artificer of our day if we invoked them as his ideal. Machinery, technical class training, decay of apprenticeship, and many other influences have now to be reckoned with in the building trades, and we can only do our best to pick up the threads in our own hands and weave them with intelligence and sincerity in desire to do everything that is best under all circumstances, whether of brickwork, joinery, sanitation or decoration. Our artistic traditions are our own, they lie in our clients' lives and desires and in our own intelligence and

studies. The fountains of inspiration are ever open to us in the study of all noble building work—Greek, Roman or Mediæval—and in the work and ways of the individual giants of the Renaissance—even of the Gothic Renaissance—so much nearer to us; and in a hearty appreciation of the fact that it is ours to translate current life into solid materials will lie our road to architectural success.

Mr. Arthur Keen, in proposing a vote of thanks to Mr. White, thought the corner house of a row of otherwise monotonous buildings gave an opportunity for welcome relief.

Mr. Maurice B. Adams, in seconding the vote, said he thought that modern architectural design did carry on some degree of continuity. If one looked at the work of Mr. Norman Shaw and Mr. Ernest George at the time the former was doing the St. James's Street front one saw a sort of "school" although there was great variety of treatment. He did not take a desponding view himself; by-and-by they might, he thought, develop something that would be taken as modern architecture. One of the things lacking in most work was thought.

Mr. Henry Lovegrove was sorry to see so many blank spaces left at corners, the walls being simply returned without any attempt at treatment. These walls were actually dangerous, not one in fifty being vertical.

Mr. E. W. Wimperis deprecated the turret treatment for corners, as it introduced verticality which was generally overmastering. He thought we in this country were going through a renaissance. Mr. Theodore Moore next spoke.

Mr. Henry T. Hare said he had hoped that the paper would have dealt more with the planning of corner houses; the ordinary corner of a street was difficult enough, but internal angles such as in a court were very difficult indeed. Turrets at corners had, he thought, been very much overdone. He did not see why a corner should not be treated simply as a corner without any straining of effect. It was to be regretted that there was so much variety in modern design. If the large majority of architects were striving with some unity they would progress better than if they were all pulling in different directions. This seemed due to the lack of any scheme of education. We were behind France, and every year more and more behind America, as to architectural education. Whenever he came from Paris to London he was struck with the squalor of our architecture. This was due to the more organized education in France. He was sure it would not hamper individuality in those that had it if we had a better scheme of education; there would be just the same variety as there was now, only it would be of a very much higher class. He expressed the thanks of the meeting also to Mr. Sydney Oetzmman for the trouble he had taken in preparing the large number of lantern slides. Mr. White briefly replied.

Enquiries Answered.

The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

"Dampness in Walls."

A London correspondent with some experience of hollow walls writes in reply to the enquiry on p. 79 of last week's issue: "The dampness, from the description given, might be caused by the rain travelling across cavity by the ties which probably have some

mortar on them. I notice that querist had the $\frac{1}{4}$ in. work on the inside, and although I have met other architects who prefer this method I could never see the advantage—in fact, it appears to be altogether wrong. The best remedy would be, if possible, to locate the faulty ties and cut them out; this is of course assuming that I am right."

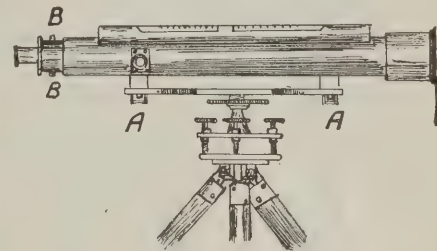
Glass Edges Blacked.

HALIFAX.—QUERIST writes: "Leaning's book on Specifications says: 'State if edges of indoor panels are to be blacked.' Why is this desirable, and what is the kind of black used?"

This is done to prevent the light being reflected from the edge and causing the peculiar glistening sheen emphasizing the opening in which the glass is fixed. Ordinary flat lamp black paint is used.

Using a Level.

WORKINGTON.—H. H. writes: "Referring to the sketch, how is the level adjusted as regards its own axis and that of the telescope; also, what should be done when the bubble,



after having been made central over each pair of screws, will not remain so when the telescope is reversed?"

The level tube appears to be rigidly attached to the telescope. Consequently correction for half the error discovered on reversal must be made by the screws A A and the rest by the levelling screws. Adjustment for collimation can then be made as usual by raising or lowering the diaphragm by means of the small screws B B. The detailed procedure is explained in any good textbook.

G. A. T. M.

Model By-laws.

ILLINGWORTH.—STANDARD SEARCHER writes: "Many town and urban district councils have adopted the Model By-laws, and one town council official has more than once brought forward an annotated copy of same to clear up points at all obscure. Can you say where these can be obtained, and the price?"

The Annotated Public Health Act By-laws are published by Messrs. Knight & Co., La Belle Sauvage Yard, Ludgate Hill, London, E.C., price 12s. 6d.

Reactions.

SIDMOUTH.—DOWN SOUTH writes: "How are the reactions shown on the accompanying drawing (not reproduced) measured? Newton's third law says that for every action there must a corresponding reaction, equal in magnitude and direction, but the line of reactions scales less than the sum of the external loads on the truss."

Newton's third law is in no wise contradicted. The law must be taken as a whole, and its general sense grasped. Newton's third law states that the mutual actions of any two bodies are always equal and oppositely directed. This is a very different thing from your reading, which is ambiguous from being too narrow. In the present problem the forces on the truss do not act in the same direction, and the line x is the resultant of the polygon of forces, and therefore does not equal the total of the loads added together as if they were all vertical. The reason is that not being parallel the actions in part oppose each other when they meet. Your solution of the problem is quite correct.

THE ADVANTAGES OF IRON DRAINS.

By JOHN W. HARRISON, Assoc. San. Inst.

THE advantages of iron over stoneware pipes for drains and sewers are so many and the disadvantages so few that it is surprising they are not more commonly used. Of course, any authority will tell you that iron pipes are better than stoneware for drains laid under or through a building; and it is obvious that if better for inside they are better for outside, except on the false score of expense. It is a very old saying amongst inspectors, surveyors, &c., that most people would sooner pay £50 or more for a new porch, conservatory or bay window to their house than £10 or less to have their drains properly laid and put in a sanitary condition. In regard to that I would say that iron drains would be no more expensive (if as much) except in the first cost, because the stoneware drain does not last in a thoroughly water-tight and air-tight condition for many years—sometimes not for many months. Defects soon arise in stoneware drains from various causes, sometimes by filling in the ground over them after inspection and testing, as, unless the trench is carefully filled and the earth carefully rammed, some of the joints will be disturbed. Also, gulleys and soil-pipe connections are nearly always made on the top of the newly-filled-in soil close to the building where it has been excavated for footings

not all of the above causes of leakage would not occur, as the material is so very much stronger than stoneware while the joints are both stronger and fewer.

In iron pipes the joints should be properly made with lead and caulked, a few strands of spun yarn being first rammed in to prevent

used the fresh-air inlet must be taken from the trap itself (of course on the house side of its water seal) or from a junction on the house side of the manhole. While mentioning the fresh-air inlet, I may add that where possible it is better to carry the shaft up clear of one's head, say about 6ft., and simply put on top a wire cage, rather than leave it at ground level or nearly so, either with or without the mica flap valve, because if the valve is fixed it soon refuses to act

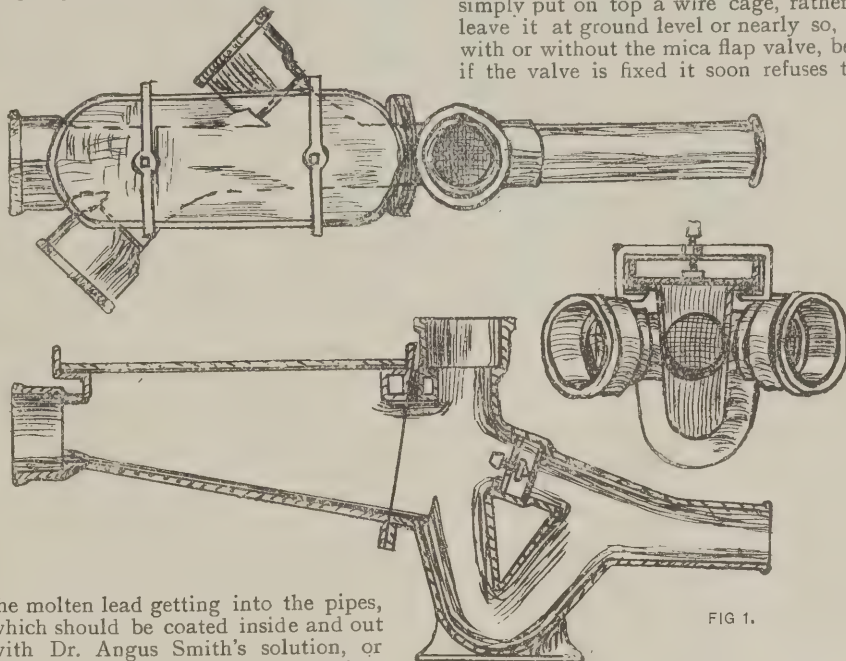


FIG. 1.

the molten lead getting into the pipes, which should be coated inside and out with Dr. Angus Smith's solution, or better still, glass-lined inside, as they are then smoother.

In laying a cast-iron drain, if the sewer is a brick one a proper stoneware block should be built into the side of the sewer above the centre of its height, and the joint between the first pipe or bend and this block made with Portland cement. If the sewer is a stoneware pipe, a proper junction or saddle connection must be inserted in it instead of the block for the brick sewer.

The iron pipes are then continued in 6ft. or 8ft. lengths at an uniform fall to the intercepting trap. It is always best to have this trap fixed in a disconnecting chamber or manhole, as access is readily obtained from this latter to clear the drain when obstructed in either direction, by means of drain rods, thus often saving great inconvenience and expense in opening the ground. The drain runs along the floor of the manhole in a channel which may be open or closed; the advantage of its being closed is that foul air cannot then accumulate in the manhole or chamber. These open or closed channels can be obtained with from one to three junctions for branch drains, on either one or both sides. If a closed channel is

properly. Another advantage of the closed channel is that the sewage cannot overflow as it does in the open half-channel pipe unless the sides are raised very high.

As the real difficulty in laying iron drains is in the cutting of the pipes and the working in of the different junctions, bends, &c., a proper plan and section, or sections, should first be made of the drains to a fairly large scale, so that measurements can be obtained; then, in ordering, the pieces or short lengths would be sent with the long ones, and thus all cutting would be saved. As the same pipes can be obtained with ears cast on for attaching to the wall, these should be obtained at the same time for the soil and vent shafts, also the gulleys, bends, junctions and open or closed channels for the inspection chambers. All could be ordered at once by an intelligent foreman or clerk of works, or they could be specified by the architect in the quantities.

The water test could be put on from the w.c. on the soil-pipe, however high, without any fear of bursting the pipes.

Fig. 1 illustrates Bland's intercepting or disconnecting channel and trap, showing one junction on each side of channel; the junctions can be obtained at any angle. Where there is no chamber or manhole this intercepting trap is hardly a suitable shape, but it can be obtained similar to the stoneware traps, or nearly so (see Fig. 2); also channels (open or closed) for the inspection chambers at the changes of direction in a drain can be obtained with from one to three branches or junctions at any angle, and straight or curved (see Figs. 3 and 4). The covers to these channels can be obtained either with bridles or bolts to secure them. The accompanying illustrations show the bridle fastenings.

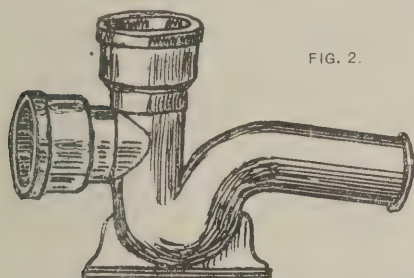


FIG. 2.

or cellars, and unless a brick pier or concrete is brought up from the solid ground, settlement is certain to take place; and so the pipes or bends are unsupported and fracture occurs. Stoneware drains also become fractured by reason of defective yard surfaces and from the gully running over or splashing; also from rain, snow, &c., in the yard thus getting through and washing away the earth or soil underneath the pipes in places and leaving them unsupported, except at intervals, when the least settlement will break the sockets.

It will readily be seen that if the pipes were of iron in 6ft. or 8ft. lengths, most if

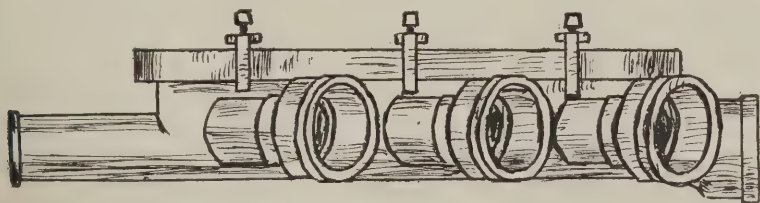


FIG. 4.

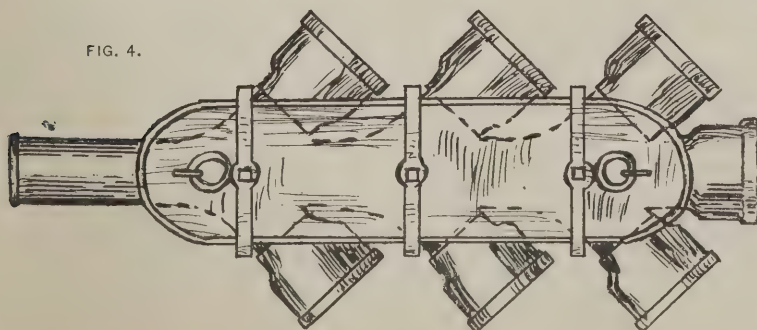


FIG. 3.

WARMING AND VENTILATION.*

By DAVID M. NESBIT, M.I.M.E.

FOR town and country houses and for small buildings where no night-man is to be kept, perhaps low-pressure hot water is the best and most economical means of heating; but in large buildings where steam is a necessity for purposes other than heating, low-pressure steam should be carefully considered. Steam plants laid out on modern lines can be so arranged as to give temperatures for the heating medium as low as, and in some cases lower than, good low-pressure hot-water apparatus. For small residences I advise a simple boiler, but of sufficient size, with good radiators that will furnish the necessary warmth; the whole installation to be simple in design and easy of manipulation. The extract ventilation may be the fireplaces themselves or in connection with the kitchen chimney.

For schools, air should be admitted 6ft. above the ground: if a vertical shaft is adopted for extraction there should be fixed up the centre a cast-iron smoke-pipe, which, as it becomes heated, rarefies the air, causing it to ascend and making the ventilation positive. In large schools nothing short of mechanical warming and ventilation will suffice to keep the air in a healthful condition. Taking the best external air we can find in our manufacturing towns at 3 to 4 volumes of CO₂ in 10,000 volumes, it is the aim of efficient engineering to get as near this standard as possible; and whilst it is not practicable to obtain this ratio in school classrooms, yet it has been possible to keep down the CO₂ to 6 and 7 volumes per 10,000, as at Bradford, where, in the mechanically ventilated rooms, the CO₂ test never exceeded 8.5 volumes per 10,000, whilst in the so-called natural ventilated schools it was never below 9 volumes and reached as high a figure as 31 volumes

Schedule.

School.	Size of Fan.	Revs.	Cost per hour in pence.	Cubic ft. of air per hour.
*Carlton Street, Bradford.	ft. 10	90	13d	2,115,000
Green Lane, Bradford.	9	176	5d.	3,069,000

* The total cost for electricity for running this fan equals £10 per school year.

The fuel consumption at the Carlton Street school was:—Coal, £80 11s. 4d.; coke, 14s.; firewood, £2 12s.; total, £83 17s. 4d. for 1,376 children=1s. 2½d. per child per annum.

The cost of fuel for the above-named Bradford schools, based on roft. super. of floor-space, was as follows:—

System.	1899	1900	1901	1902	1903
Mechanical	7'000d	9'44d.	14'9d	11'1d.	10'12d.
"Natural"	7'870d.	10'25d.	14'8d.	12'4d	11'46d.

The standard volume of air should be not less than 1,700 cub. ft. per child per hour, and the maximum need not be more than 2,000ft. The average speed of the incoming air should not exceed a velocity of 5ft. per second over an inlet grating. This may seem to be a considerable requirement, but it is easily obtained by insisting upon large air-ducts, vertical flues, inlets into the rooms of ample area, and large fans running evenly and slowly. These desiderata must be the foundation of any good installation for warming and ventilating, and without them failures will be many and obvious. The position of the fresh-air inlet should be determined with a view to obtain-

ing the purest air: it should lead up to a filter, the design of which may be left to the engineer, as there are several good forms on the market at the present moment. I have used both jute and coke, with a water-spray attached, to cleanse or wash the incoming air, but the water-spray should be employed with care, as it is likely, if used too freely, to make the air too humid. It is not always realized that in this country the air has sufficient humidity in itself and seldom requires added moisture unless it is being heated. Where, however, the heating agent is high-pressure steam or hot water it is necessary to add moisture, as the air in its normal state, passing over highly-heated surfaces, loses much of its vitality and may be said to be burnt.

I adopt a maximum pressure on the boiler of 5lbs., which is equal to 228 degs. Fahr., and frequently steam at 0lbs. to ¼lb. and 1lb. is used and a perfect circulation obtained.

The ventilation or extraction of the vitiated air of a school containing, say, 1,500 children, having 2,000 cub. ft. of air per hour provided for each, equals in the aggregate 3,000,000 cub. ft. of air per hour, which obviously presents no easy problem. I may, therefore, be permitted to refer to the "Nuplunnette" cabinet system. By this arrangement the heating surface is placed within a "cabinet" designed to harmonize with the architectural treatment of the building, and the teacher has only to open the door, regulate the shutters for the supply of air or the valve for the supply of warmth, and then close it. The cabinet gives absolute security against harm to the children, as no hot radiators or pipes are within their reach. The air inlet is arranged at a height of not less than 6ft. above the outside ground-level, and it need not be more than 8ft. This prevents the admission of much dust and other matter; but to ensure the fullest security in this respect the system has been designed to include filters.

Theatres and Concert Halls.

In some theatres and concert halls the plenum system has been adopted with success, and is giving the best results. Other buildings of the kind have low-pressure steam or hot water, with automatic ventilation, and have proved equally successful. Take, for instance, the Imperial Theatre at Westminster. In work of this description where the plenum system is adopted I am an advocate of downward ventilation (extraction) similar to that in the theatre of the Royal Dublin Society. This was the first installation of its kind in the British Isles, and whilst there have been many copyists, none surpass it in easy working, healthfulness and comfort. It has been found, too, that when the air is propelled downwards from the ceiling the acoustics of the chamber are improved.

Engineers have not yet decided as to the exact volume of air which should be delivered into such buildings, but I think 1,000 cub. ft. per head per hour should suffice. For example, in a theatre with a sitting accommodation of 1,000, the apparatus would have to be designed to be capable of delivering and withdrawing 1,000,000 cub. ft. of air per hour, and the temperature should be maintained at 60 degs. Fahr.

Mr. A. R. Wolff, a celebrated American warming and ventilating expert, observes that in the main auditorium of the Carnegie Music Hall, with its seating capacity of over 3,000, the fresh, cooled or warmed air enters through the perforations in the suspended ceiling and travels with slow velocity at a height of about 80ft. to exhaust openings in the floor risers, and an equable temperature is maintained under any external atmospheric conditions. He adds: "In such a system it is specially important that the volume of air exhausted be less than the volume of fresh (warmed) air forced into

the hall, so that the air within the room be under pressure; otherwise external cold air will be drawn into the building through doors and windows and may create objectionable draughts."

The remarks I have made with reference to theatres and concert halls may be aptly applied to all places of public worship, but it is difficult to get the authorities and office-bearers of such buildings to spend much money, as they find several impediments in the way.

Municipal and County Buildings.

Council-chambers, courts, large halls, reception-rooms and the largest offices of municipal buildings should, in my opinion, be treated on the plenum system. After the great success of the overhead plenum system at the Royal Dublin Society lecture-theatre it was decided to carry out the same plan at the Belfast City Hall, Cardiff Town Hall and Law Courts, Walsall Town Hall and Deptford Town Hall. I have no hesitation in saying that when these installations are completed they will rank as the best of their kind in the Kingdom. In all these works low-pressure steam, worked at atmospheric pressure, is being used, which practically gives the heating surface the same temperature as low-pressure hot water, and obviates the great complaints hurled at steam-heating when used at high pressures. At the Oxford Municipal and Stafford County Buildings the plenum system with low-pressure steam has been adopted and has given every satisfaction. The ducts and heating batteries of these two buildings are under the basement floor and work equally well as in the overhead system. The inlets are about 8ft. above the floor and the outlets at floor level.

In the small offices and corridors direct radiators seem to give greater satisfaction. If this course is adopted care should be taken to insist on extraction flues being provided in every room. Air inlets with louvred gratings behind the radiators should be fixed for the supply of fresh air. I am no believer in Tobin tubes, as I find them generally closed or blocked up, and at times they are used as receptacles for all kinds of rubbish.

A better plan, which I have adopted in my own office, is to fix a low-pressure steam radiator (hot water will do equally as well) in the recess under a window furthestmost from the occupant. The sash of the window is kept open 4in. or 6in., according to the outside temperature, and over this opening a filter arrangement is contrived, simple, cheap, but effective, so as to arrest blacks and other dust particles. The air passes into the office over an area 2ft. 9in. by 6in. (which equals 1½ sq. ft.), is warmed in its transit, and maintains a fresh, healthy and comfortable atmosphere from morning to evening, week in and week out.

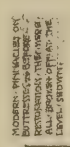
Hotels.

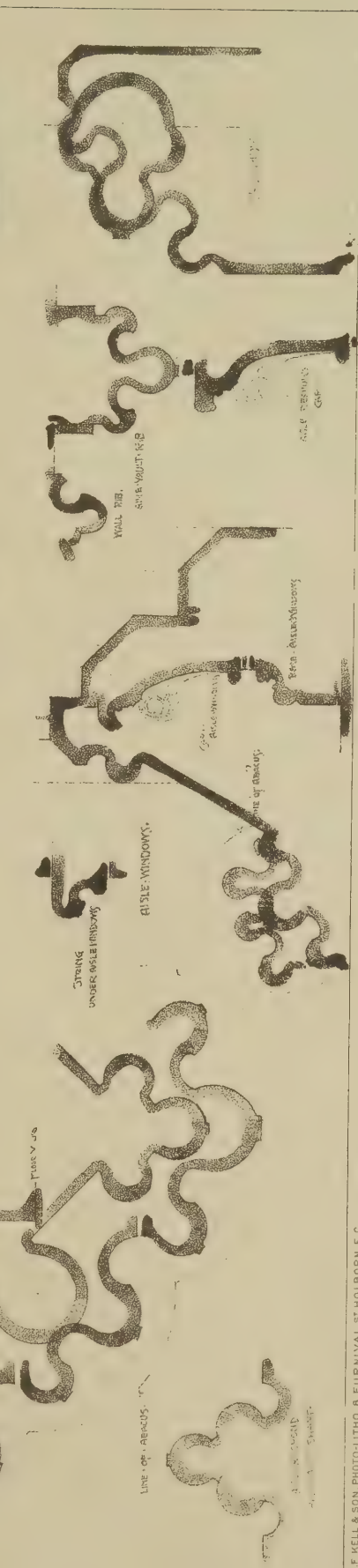
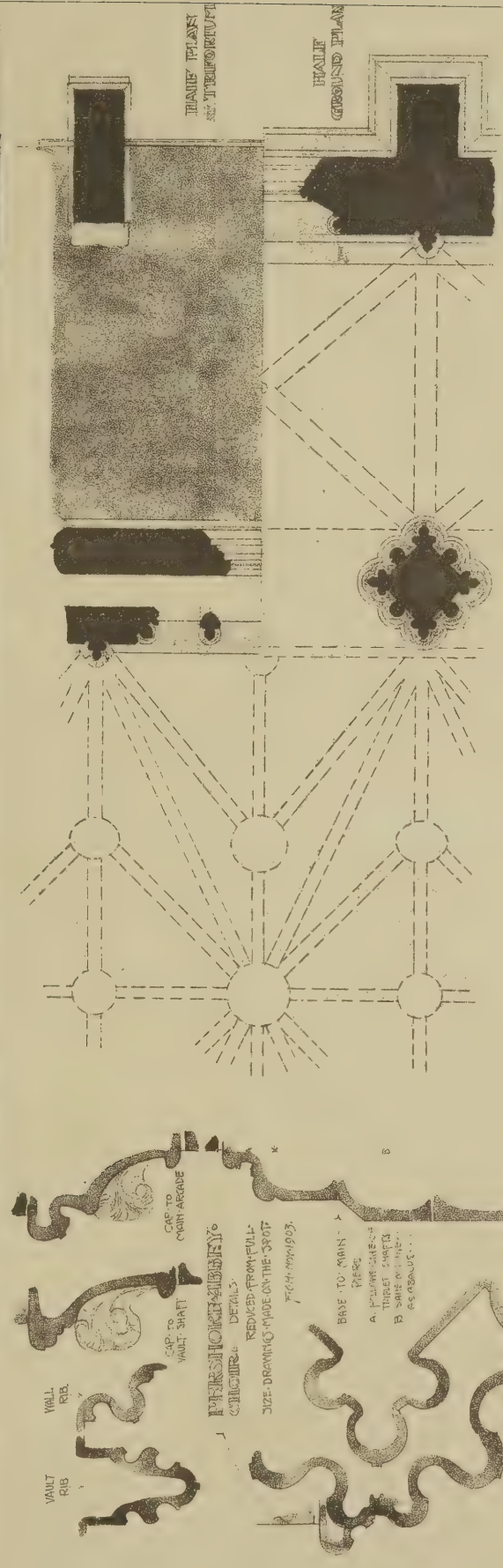
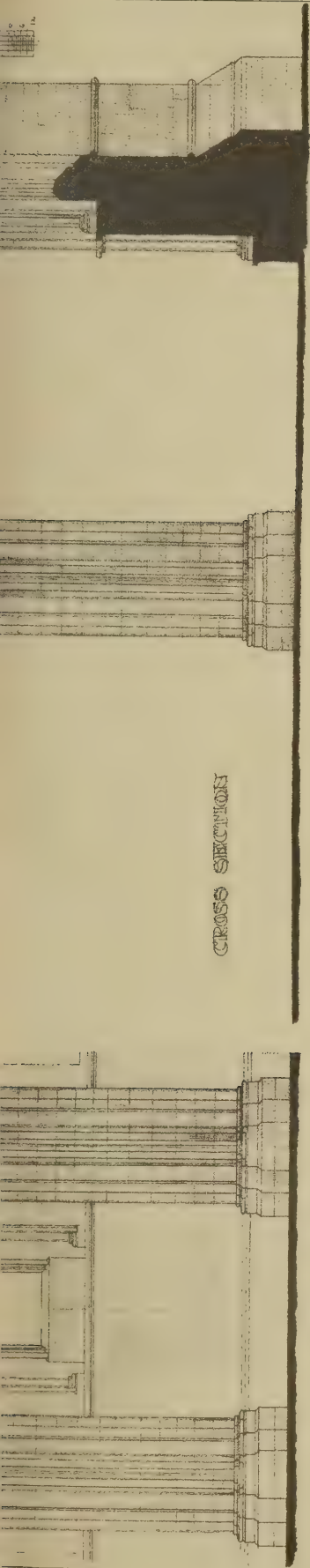
Perhaps the most modern and up-to-date hotel as far as hygienic arrangements are concerned is the one recently erected at Manchester by the Midland Railway Co. The fans, two in number, each discharge into the building 2½ million cub. ft. of fresh air per hour. The ventilation of the kitchen, laundry and hairdresser's department is treated separate and distinct from the general portion of the hotel. For filtering the air a screen is used having an area of 320 sq. ft. exposed to the inlet. An analytical report shows that—

Outside air before entering the "cheese" cloth filters on top of the flat over the reception-room had—	4'2
Air after passing filters	4'5
Air after leaving fan	4'5
Air in smoking-room	5'0
For heating the building low-pressure	

* Summary of a paper read before the Society of Architects on February 18th, 1904.

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steam is employed at $\frac{1}{2}$ lb. pressure in conjunction with the Atmospheric Steam Heating Co.'s system. The waste from the various traps in connection with the kitchen and laundry, and returns from the heating, are put through the "Nuconomiser" system, which practically heats the whole of the domestic hot-water supply to the hotel at a constant temperature of 200 degs. Fahr. This is not any mean problem when it is considered that the average daily consumption of hot water approximates 9,000 gals. The entrances to this hotel are fitted with Van Kannel doors. I think the more general adoption of these would assist warming and ventilating engineers to solve many difficult problems, especially those relating to draughts.

The following are further particulars relating to the apparatus:—

Revolutions of motor, 900 }
Revolutions of blower, 180 } per minute.
Diameter of blower wheel, 7ft.
Number of blades on wheel, 8.
Breadth and depth of blades, 4ft. 1in. by 1ft. 6in.
Area of each blade in sq. ft., 6'124.
Volume of air delivered in cub. ft. per hour, 2,766,960'00.
Size of discharge in sq. ft., 16'47.
Velocity through outlet in ft. per second, 46'66.

The motor running at 400 volts 20 ampères, requiring 10'7 h.p. to drive blower, using 8 units per hour, at 1'4d. per unit, or 10d. per hour.

I would urge and advise those who are interested in hotel planning to lay down the whole of the engineering scheme while the building is on paper. The air extraction and ventilation of the guests' rooms should be absolutely separate from the other portions of the building, and special attention should be given to the extraction and heat from the kitchens, laundries and similar places, especially if they are in the basement. If any of the principal rooms are immediately over the kitchens or other domestic offices a false ceiling may be adapted to the room beneath, and currents of cold fresh air made to pass through the space between, so as to keep the room above quite cool. If the flues from the kitchen ranges pass through bedrooms, special precautions are needed to have in these flues, however well built, a cavity wall of 2 $\frac{1}{2}$ in. and an outside wall 4 $\frac{1}{2}$ in. thick to the bedrooms, to prevent the radiation of heat making them uninhabitable in summer.

Hospitals, Asylums, &c.

It is difficult to lay down a hard-and-fast rule for the system to be adopted in this class of building. In hospitals plenum installations have been found to be very effective and have given satisfaction to those using them, but I would like to say that it is quite possible to make a satisfactory installation which will work automatically. This has been our experience at University College Hospital, in Gower Street, where the whole of the wards are heated by radiators of a special type, allowing fresh air to pass in and through at the rate of 4,000 cub. ft. per bed per hour. The air enters the wards at a low velocity and without draughts. The extract shafts are carried up well above the ridge lines and have open-sided outlets, some in brick and some in woodwork, allowing the vitiated air to discharge freely at a high altitude. I might mention, too, that there is no "air pump" or other kind of cowl fixed on the shafts. Much money is spent on these useless devices, as the following will show:—Billings on cowls (p. 282):

"The sub-committee appointed at Leamington to test the ventilating exhaust cowls beg to report that they have given the matter their most careful attention, and carried out at the Royal Observatory, Kew, an elaborate series of about 100 experiments on seven

different days at different times of the day and under different conditions of wind and temperature. After comparing the cowls very carefully with each other, and all of them with a plain open pipe as the simplest and, in fact, only available standard, the sub-committee find that none of the exhaust cowls cause a more rapid current of air than prevails in an open pipe under similar conditions, but without any cowl fitted on it. The only use for the cowls, therefore, appears to be to exclude rain from the ventilating pipes, and as this can be done equally if not more efficiently in other and similar ways without diminishing the rapidity of the current in the open pipe the sub-committee are unable to recommend the grant of the medal of the Sanitary Institute of Great Britain to any of the exhaust cowls submitted to them for trial."

This is taken from the report of the judges, W. Eassie, Rogers Field and Douglas Galton.

For the out-patients' department of University College Hospital the plenum system is adopted, chiefly for the reason of so many patients being crowded together for a time. The Royal London Ophthalmic Hospital is treated in a similar manner, the out-patients' department only being on the plenum system, which has worked well and given good results. The latter hospital is warmed by low-pressure hot water; the former by low-pressure steam at $\frac{1}{2}$ lb. pressure.

Asylums for the insane should, I think, be heated on the plenum system. The Nottingham City Asylum, Dorset County Asylum and Hereford County Asylum are notable examples of the good effects of this system when properly designed, installed and worked.

Much has been said as to the inefficient state of the warming and ventilation of Claybury Asylum, but it is only fair to state that it is the absence of the plenum system rather than its presence that is at fault. If the plenum system had been carried out at this asylum the troubles met with would never have occurred. The only portions of the asylum treated on the plenum system are the recreation hall and the chapel.

In large institutions, where the engineering plant has to embrace such items as warming and ventilating, electric lighting, pumping, &c., it is advisable, and cheaper, to house the whole of the generating plant at one central station and to do all the work from one point. With a central plant the

Exhaust Steam

from the several engines and pumps can be so collected as to ensure its being used to the best advantage.

When I mention that the exhaust steam from an engine developing 100-i.h.p., supplying light to, say, 900 or 1,000 16-c.p. incandescent lamps, will heat a building with direct-heating surface containing 1,500,000 cub. ft., and is equal to a coal consumption of 355 tons per six months of winter weather for a twelve hours working day, it will be readily seen what a valuable "by-product" there is in exhaust steam; and this saving can be effected without adding back pressure to the engine and pumps, a matter which seems to haunt the average engineer like a nightmare.

So much has been written about economy in heating plants, &c., that it is as well to give you an example which has recently come under my own observation.

An installation was to be worked with live steam at 40 lbs. pressure. Exhaust steam was used from the electric-light engines, and the saving to the authorities amounts to 9 cwt. per hour; so that if the apparatus works eight hours per day for six days per week the saving will amount to 21 $\frac{1}{2}$ tons in the aggregate per week. But further economies were still possible in the consumption of coal, coke and water.

By the substitution of the "Nuconomiser" system for the old hot-well arrangement at St. George's Infirmary, Fulham Road, London, the saving effected during twelve months is equal to £326, and they now supply their boilers with feed water at boiling-point instead of at very low temperature.

At an hotel on the south coast where the system has been in operation for five months the saving in coal alone amounts to 107 tons, which at 27s. per ton is equal to £144 9s. od.

It has been asserted that by using exhaust steam the grease in suspension is carried over and is injected into the boilers, causing damage to them, but experience shows this to be a fallacy. To eliminate the grease from the exhaust steam the "Nudeemen" grease separator is the best of its kind on the market at the present day, and will remove about 98 to 99 per cent. of the oil passed into the engine cylinders through a properly gauged sight-feed lubricator.

Inlets and Outlets; Boilers; Pipes; Radiators.

Much discussion has taken place amongst experts as to the proper position of inlets and outlets. My own opinion is that the right position for the inlet, if not at the ceiling level, is from 8ft. to 10ft. from the floor line, and that of the outlets quite close to the floor line.

Boilers should be of ample capacity. They need not consume extra fuel on account of their size unless the attendant is careless. For low-pressure steam-work (gravity), say, at 5 lbs. working pressure and under, for small installations, cast-iron sectional boilers are used with success. For low-pressure hot-water work, where the head of water does not exceed 15ft. to 20ft., the same type of boiler may be used, but for the higher pressure wrought-iron boilers of the simplest form are preferable, say, a plain saddle, return-end saddle, Cornish Trentham with check draught end, and the cylindrical dome top boiler.

Boilers for high-steam pressures should be made from best mild steel sheets. The best and most economical boilers for large installations are of the Cornish or Lancashire type. A Cornish steam boiler has one flue fixed eccentrically in relation to the outer shell. A Lancashire boiler is generally denoted by having two flues fixed eccentrically in relation to the outer shell, and it is common practice now to have such boilers working up to 140 lbs. and 160 lbs. pressure daily.

For high-class work wrought-iron or steel pipes, with screwed or special joints, should be used for pressures up to 20 lbs. Cast-iron pipes with caulked joints are generally a source of annoyance to engineers, owing to leakages. In jointing wrought iron pipes the fitter should be extremely careful to use as little red and white lead as possible and endeavour to make the joints really "metallic"—that is, iron to iron, without (if possible) the aid of red and white lead and flax—but this requires skill, and it is seldom done.

Many people who are uninitiated in the art of pipe-fixing think that the alignment is of no serious consequence, but I assure you that many installations are more defective through the want of proper care being exercised in the correct grading and alignment of piping than anything else.

Finally, with regard to radiators, I may say that this is one of the most serious matters in relation to this subject that heating engineers and architects have to face. The best ventilating or indirect radiator is probably that used at University College Hospital. One was required that would admit 4,000 cub. ft. of air per bed per hour, and in a twenty-four-bed ward this gave an aggregate of 96,000 cub. ft. of air per hour through eight radiators.

L.C.C. DRAINAGE BY-LAWS.

IN August, 1899, the Metropolis Management Acts Amendment (By-laws) Act was passed (62 & 63 Victoria, chap. 15), giving the London County Council power to make by-laws with regard to the deposit of plans, sections, and particulars of certain drainage work, a portion of section 2 of this Act being as follows:

"Requiring persons about to construct, reconstruct, or alter the pipes, drains, or other means of communicating with sewers, or the traps or apparatus connected therewith, to deposit with the Sanitary Authority of the district such plans, sections, and particulars of the proposed construction, reconstruction, or alteration as may be necessary for the purpose of ascertaining whether such construction, reconstruction, or alteration is in accordance with the statutory provisions relative thereto and with the by-laws made under the said section."

These by-laws have now been made, were approved by the Local Government Board 20th August last, and are in force at the present time.

These by-laws require that architects must, before having sanitary work approved by a sanitary authority, submit plans in duplicate showing "every floor of any building in connection with which such pipes or drains are to be used, and the position, form, levels, and arrangement of the several parts of such building, including the roof thereof, and the size and position of every drain, manhole, gully, soil pipe, waste pipe, ventilating pipe and rain-water pipe, and of any drain passing under such building, and the position of every bath, water-closet apparatus, slop sink, urinal, lavatory basin or apparatus, sink (not being a slop sink), and trap in connection with the foregoing" (clause 2); and also "show thereon the position of all windows and other openings into the building, and the height and position of all chimneys belonging to the building within a distance of 20ft. from the open end of a soil pipe and ventilating pipe" (clause 3), and also a block plan showing the properties and streets adjoining.

Mr. Max Clarke writes: "One point in connection with these new by-laws it seems to me should be settled by the Institute without delay—viz., do these by-laws, and the various drawings required by them, come within the clause in the R.I.B.A. Form of Contract which requires the contractor to give all notices and pay all fees, as the words 'Acts, regulations, or by-laws' are used in the clause; or is it open to the architect to insert in the specification that the contractor shall include the sum of £ . . . to cover the cost of copies of specification and drawings to be paid to the architect's instructions?"

Mr. Edwin T. Hall says: "I would ask the R.I.B.A. Practice Standing Committee to consider whether this is not a very onerous and unnecessary tax on either the owner, or the architect, or the contractor of a building in London. In fact, it enables a local sanitary inspector, or, at all events, his chief, to require a complete set of drawings, of a building—plans, sections, and if exacted, elevations—for the mere purpose of showing the drains, waterclosets, lavatories, &c., of a building. . . . These plans have also to be supplied in duplicate, and this means two complete sets of plans, in addition to a complete set which has to be supplied to the district surveyor. The necessity for the deposit in certain buildings of the last-named is perfectly reasonable, because a district surveyor is an officer charged with seeing, broadly speaking, that a building is substantially constructed within the provisions of an Act of Parliament. . . . I would further note that the expense becomes very great where a large existing building is having a new system of drainage put into it, if by-law No. 2 is interpreted by the sanitary authority to mean that "necessary" plans are all the plans required

by No. 1. It would mean the measuring up of the whole of the old buildings, and preparation of complete sets of drawings, for no other purpose than this sanitary requirement. You will also note that by-law 1, section 4 requires a complete specification of all sanitary and other matters. I submit that if a block plan, as required by section 5, is given, with the levels and gradients properly marked on, this shows them everything that is necessary, as it gives them in effect the longitudinal sections. Beyond this plan a written description of the pipes and apparatus below and above ground would be reasonable."

The Council of the Royal Institute endorse the opinions of Mr. Max Clarke and Mr. Edwin T. Hall, and is sending a letter to the Local Government Board, the London County Councils and all the Metropolitan Borough Councils on the matter.

Keystones.

The Eton Memorial.—The committee of the Eton Memorial have decided, as a first step towards obtaining a design for the proposed memorial building, to invite Old Etonians who are architects to prepare plans. Further details can be obtained from the hon. secretary of the memorial at Eton.

The University of California has arranged for the establishment of a complete Department of Architecture, which will offer a four years' course, with all the advantages of liberal equipment and adequate instruction. Mr. John Galen Howard, of New York, will be the head of the department.

Change of Address.—Mr. Edwin O. Sachs, consulting architect, and Messrs. Edwin O. Sachs and Hoffman, architects and surveyors, have removed from No. 3 to No. 7, Waterloo Place, Pall Mall, S.W. The telephone number will be as before, 5164 Gerrard; the telegraphic address, "Stageable," London.

Usher Hall, Edinburgh.—At a special meeting held on Tuesday last week the Town Council of Edinburgh approved the plans of the Usher Hall prepared by Mr. Morham, city architect, and his deputy, Mr. Williamson, and instructed these gentlemen to proceed with the work at a total cost, including site, of £145,000.

Escapes from Factories.—The Building Act Committee of the London County Council have just issued a report on the progress made in the work devolving upon the Council under the Factory and Workshops Acts in reference to the provision of adequate means of escape from factories and workshops in London where more than forty persons are employed.

Sunderland Competition.—The Sunderland Town Council have accepted on the recommendation of Mr. Macvicar Anderson plans for the reconstruction of the Town-house Buildings at a cost of £30,000 submitted by Messrs. H. W. Wills and John Anderson, Adelphi, London. Messrs. R. Hemingway and Alderman Bradshaw, of Nottingham, won the second premium and Messrs. S. G. Goss and Harold Burgess were placed third.

At Vickerstown—which is the village of Messrs. Vickers, Sons & Maxim, Ltd., on Walney Island—the "King Alfred Hotel" was opened last week by Earl Grey. It will be conducted under a Trust scheme with the object of discouraging intemperance and promoting the social welfare of the community. Like most of the other houses at Vickerstown (some of which were illustrated in THE BUILDERS' JOURNAL for September 2nd, 1903), it has a brick base with rough-cast, timbered and tile-hung gables and red slates on the roof. Mr. W. Moss Settle, A.R.I.B.A., of Barrow-in-Furness, was the architect.

St. John's Church, Kidderminster, has just been completed. Part was erected in 1893-4 at a cost of £10,000, and the present portion has cost £5,000. Messrs. J. A. Chatwin & Son, of Birmingham, are the architects, and Messrs. Collins & Godfrey, of Tewkesbury, the builders.

Mr. J. Bruce Merson has relinquished his connection with the firm of Trant Brown & Humphreys, 332, High Road, Kilburn, London, N.W., and the practice is now carried on by the remaining partners—as to the civil engineering department by Mr. H. Howard Humphreys, and as to the architectural department by Mr. W. L. Trant Brown.

Institution of Mechanical Engineers.—The total revenue for last year was £10,849, while the expenditure was £10,605, leaving a balance of £244. Prof. Burstall reports that the 100-h.p. gas-engine which has been designed for experimental work in connection with the Gas-Engine Research Committee is now ready to be tested at the works. The reference section of the library of the Institution (consisting of about 4,000 books and pamphlets) has now been re arranged in subject order according to the Dewey decimal system.

A Wakefield Competition.—In the competition for new receiving wards, attendants' rooms, porter's lodge and new entrance gates at the Wakefield Union Workhouse, limited to architects resident within the limits of the Union, nine sets were submitted under mottoes. The assessor, Mr. Vickers Edwards, architect for the West Riding of Yorkshire, has made the following awards:—First premium, £25, motto "Economy" (Mr. John Day, 89, Kirkgate, Wakefield); second, £15, "Light and Air" (Mr. Thornton, King Street, Wakefield); third, £5, "Vagrant" (Mr. Newbald, King Street, Wakefield). The guardians have adopted the assessor's report and appointed Mr. Day to carry out the work.

New Professor of Architecture at Liverpool.—The Council of the University of Liverpool have appointed Mr. C. H. Reilly, M.A., A.R.I.B.A., to the Roscoe Chair of Architecture left vacant by the resignation of Professor Simpson on his appointment to University College, London. Mr. Reilly, who is in his thirtieth year, was a scholar of Queen's College, Cambridge. He graduated, in 1896, in the first class of the Mechanical Sciences Tripos. After leaving Cambridge he received practical training under his father and in the office of Mr. John Belcher, A.R.A. Since then he has been in practice for three years with Mr. C. Stanley Peach, F.R.I.B.A. In the competition for the Liverpool Cathedral his design was selected for honourable mention. For the last three years Mr. Reilly has lectured at King's College, London, on architecture and building construction, and has superintended the work in drawing and design of the day and evening students in the architectural studio. He is a member of the Board of Studies in Fine Arts in the University of London, and has taken an active part in university work.

Obituary.

The late Mr. Barrow Emanuel died from exhaustion following septicaemia (blood-poisoning).

Mr. S. Halls, head of the firm of Halls & Son, architects and builders, Dolton, North Devon, died suddenly on February 13th, from heart disease.

Mr. Joseph Mathieson, master-builder, of Aberdeen, died recently. For a number of years he worked at his trade as a mason in Aberdeen, and was well known in trades-union circles. Some years ago he started business on his own account, and was building up a good connection.

Trade and Craft.

Ruberoid.

Ruberoid roofing is now an established commodity in the building trade, where it has won a position by reason of its serviceability. It possesses many excellent qualities as a roofing material, being light, durable and easy to fix. It is made from the best wool felt thoroughly saturated with an acid, alkali and waterproof compound which has for its base a practically indestructible mineral; there is no paper, tar, pitch, rubber or asphalt whatever in it, so that it will not melt and run, nor is it affected by fumes of any kind: in regard to this last, one manufacturer writes to say how effective it has been on a vitriol chamber top: others speak, from experience, of its durability in exposed situations, while not the least satisfactory report is that from a brewery in Sydney, N.S.W., where its non-conductivity of heat was strikingly shown in comparison with a galvanized iron roof. The makers of Ruberoid are Messrs. Robert W. Blackwell & Co., Ltd., 59, City Road, E.C., from whom full particulars can be obtained.

Killers' Hopton-Wood Stone.

This stone has been used for many years in some of the most important buildings in the country, such as the Houses of Parliament, the Tower, the Law Courts, Southwell Minster, White Star Offices, Liverpool, &c. The quarries produce three qualities of it, known as the white bed, grey bed and dark bed. The white bed is employed for monumental purposes. The grey bed is used for best finished and polished building work: it will take a polish equal to marble or granite, and can be supplied at less cost than either: in the Imperial Institute it is seen to good effect. The dark bed is the hardest, and is now put on the market for all descriptions of general masonry requiring a hard and durable surface. The crushing stress, as tested by Messrs. Kirkaldy, is 1,105 tons per sq. ft. Formerly the cost of production prevented the dark bed from being brought into general use, but this has been so much reduced by new methods that it is now sold at prices which compare favourably with good Yorkshire or similar stone. Messrs. J. Hodson & Son, of Nottingham, are the sole agents.

Bricks.

Messrs. J. H. Sankey & Son, Ltd., of Essex Wharf, Canning Town, E., send us sections A and F of their catalogue, dealing with bricks, tiles, cement, &c. The stock of bricks comprises a number of special varieties—hollow moulded headers and stretchers, plinth, angle, &c.—also paving and channel bricks of many kinds. Hollow bricks for partition walls, &c., fixing bricks, rubbers, enamelled and salt-glazed bricks, and ventilating bricks are also supplied. Tiles of every sort are shown in the catalogue, as well as finials, pots and slates. The fireclay catalogue deals with firebricks, blocks and tiles. It is observed that the firm has one of the largest connections in the kingdom, having made a speciality of the firebrick trade for more than forty years. Their London stock exceeds 1,000 tons and consists of eight or nine distinct makes. Special attention is directed to Sankey's infusible silica firebricks, which are practically free from expansion and contraction, so that furnaces built with them can be allowed to cool and be reheated without injury to the crown or any other part of the brickwork. Moreover these silica bricks can be made so light that 1,000 only weigh a ton, which is about one-third the weight of ordinary firebricks. Messrs. Sankey state that a general catalogue comprising three sections—fireclay goods, brick, cement, &c., and sanitary goods—will shortly be issued by them.

Modern Closet Sets.

One of the most admirable designs in the supplementary catalogue of domestic sanitary appliances issued by Adamsez, Ltd., of Scotswood-on-Tyne (London office, Old Queen Street, Westminster), is the "Epic" set, comprising cistern, flush pipe and closet. The cistern and closet, as shown, are in "Titanite," finely glazed without lead, and are embellished with a modern decorative design well arranged in relation to the surfaces it covers. The brackets supporting the cistern, and the flush pipe, are plated, which gives the fitting a smart and attractive appearance; the seat is of oak. The cost of this set is £10 6s. with a 3-gal. cistern, but it is also supplied in a less elaborate style—brass flush pipe and painted 2-gal. cistern—at £7. Quite plain sets for general use, with white fireclay closet, cast-iron cistern, &c., are obtainable at £4 4s. A speciality of the firm is a low-down closet set in which a thoroughly effective flush is obtained without noise. This is also well-designed—in fact, Messrs. Adamsez are to be congratulated on having got away from stock patterns and decorated their goods with modern designs that have a very pleasing effect.

Ward Stoves, Grates, &c.

Central stoves for wards, schools and other large rooms are one of the specialties of Messrs. Hendry & Pattison, Ltd., of 11, Hill's Place, Oxford Street, London, W. Their patent improved "Hygiastic" stoves, with single or double fires and descending flues, are made in several sizes, the casings being of cast-iron, enamelled slate or marble. These stoves have been specially designed for hospital and sick wards, and have been used for that purpose in the chief hospitals of the kingdom. All the patterns made by the firm are good, pattern C especially so, with its casing of Rouge Royal or St. Ann's marble and its well-designed fronts. Messrs. Hendry & Pattison also adopt their "Hygiastic" patent to grates, which can be had in many excellent patterns, in glazed faience, in iron and wood. Ventilators, cowls, air gratings, flue plates, mantels and ranges are also made by the firm; and another speciality is the "Gas-steam" radiator, which is a complete steam plant in itself, fed simply by a gas pipe and requiring no separate boiler, pipes or chimney.

New "Ediswan" Leaflets.

From the Edison and Swan United Electric Light Co., Ltd., we have received a further large budget of new leaflets. Four show electric-light fittings, comprising pendants and table standards of new design at prices which should bring them within the reach of the smallest users of electric light. Also some ornamental modern styles of electroliers and floor standards. Electric-lighting accessories are represented by leaflets Nos. A 2016 and A 2023, patent pear switches and "Safety" Tumler switches respectively. The pear switches are a distinct novelty in every way, the old press-bar movement having been abolished and that of the well-known "Ediswan" "wedge" Tumler switch substituted (this latter was dealt with in our "Electrical Notes" quite recently). Leaflet No. B 2020 illustrates the O.K. dry cell, which retails at a low price and compares favourably as regards efficiency, life and behaviour under changes of temperature with more expensive cells of a similar nature. Other leaflets describe the "Ediswan" dynamo and motor brushes, flexible cords and the "Ediswan" electric-light carbons, which are claimed to be superior to any, giving a maximum light with no noise and no dropping of ash. The company have just opened premises at 60, Great Marlborough Street, Regent Street, W., as a wholesale West End warehouse and showrooms. Here a large stock will be kept for the convenience of the trade.

Current Market Prices.

		£	s.	d.	£	s.	d.
FORAGE.							
Beans	per qr.	1	14	0	2	0	0
Clover, best ..	per load	4	0	0	4	7	6
Hay, good ..	do.	3	12	6	4	0	0
Sainfoin mixture ..	do.	3	12	6	4	2	6
Straw	do.	1	10	0	2	0	0
OILS AND PAINTS.							
Castor Oil, French ..	per cwt.	1	0	5	—	—	—
Colza Oil, English ..	do.	1	3	9	—	—	—
Copperas	per ton	2	0	0	—	—	—
Lard Oil	per cwt.	2	15	0	2	17	0
Lead white, ground, car-							
bonate	do.	1	4	10	—	—	—
Do. red	do.	1	0	4	—	—	—
Linseed Oil, barrels ..	do.	0	17	7	—	—	—
Petroleum, American ..	per gal.	0	0	7	0	0	7
Do. Russian	do.	0	0	5	0	0	7
Pitch	per barrel	0	8	0	—	—	—
Shellac, orange	per cwt.	10	5	0	10	10	0
Soda, crystals	per ton	3	2	6	3	5	0
Tallow, Town	per cwt.	1	5	3	—	—	—
Tar, Stockholm	per barrel	1	2	0	—	—	—
Turpentine	per cwt.	2	5	4	—	—	—
METALS.							
Copper, sheet, strong ..	per ton	70	0	0	—	—	—
Iron, Staffs., bar	do.	6	0	0	8	10	0
Do. Galvanised Corru-							
gated sheet	do.	10	5	0	10	7	6
Lead, pig, Soft Foreign ..	do.	11	12	6	—	—	—
Do. do. English common							
brands	do.	11	17	6	—	—	—
Do. sheet English 3lb. per							
sq. ft. and upwards ..	do.	14	0	0	—	—	—
Do. pipe	do.	15	0	0	—	—	—
Nails, cut clasp, 3in. to 6in.	do.	9	5	0	—	—	—
Do. floor brads	do.	9	0	0	—	—	—
Steel, Staffs., Girders and							
Angles	do.	5	0	0	6	5	0
Do. do. Mild bars	do.	6	0	0	6	5	0
Tin, Foreign	per ton	126	7	6	126	17	6
Do. English ingots	do.	128	10	0	130	10	0
Zinc, sheets, Silesian ..	do.	24	5	0	—	—	—
Do. do. Vienne Montaigne	do.	24	10	0	—	—	—
Do. Spelter	do.	21	12	6	21	17	6
TIMBER.							
Soft Woods.							
Fir, Dantzic and Memel ..	per load	1	13	0	3	0	0
Pine, Quebec, Yellow ..	do.	5	5	0	6	5	0
Do. Pitch	do.	2	11	0	2	16	0
Laths, log, Dantzic	per fath.	4	10	0	5	10	0
Do. Norrköping	per bundle	0	0	7	—	—	—
Deals, Batsian, Bright							
Spruce, 2nd, 3x9x12ft.	per std.	10	0	0	—	—	—
Do. Rimouski Spruce ..	do.	8	10	0	8	15	0
Do. Unsorted, 3x9x1ft.	do.	8	10	0	8	15	0
Do. Petschora, Yellow,							
3rd, 3x9	do.	11	0	0	11	5	0
Do. Sundsvall, Yellow,							
5th, 3x9	do.	9	0	0	—	—	—
Do. Blankaholm, Yellow,							
2nd, 4x8	do.	9	10	0	—	—	—
Do. do. do. 4x7	do.	9	0	0	—	—	—
Do. Sandarne, Yellow,							
3rd, 4x9	do.	15	15	0	—	—	—
Do. do. do. 3x9	do.	15	10	0	—	—	—
Do. Nederkalix, Yellow,							
1st, 3x9	do.	10	15	0	—	—	—
Do. Oserko, Yellow, 4th,							
3x9	do.	11	0	0	11	5	0
Do. Umba, Yellow, 2nd,							
3x9	do.	15	0	0	—	—	—
Do. Kovda, Yellow, 3rd,							
3x11	do.	10	5	0	—	—	—
Do. do. do. 3x9	do.	11	5	0	11	10	0
Do. do. do. 3x8	do.	9	5	0	9	10	0
Do. St. Petersburg, Yell,							
1st, 2nd & 3rd, 3x9 ..	do.	8	10	0	—	—	—
Do. Quebec Spruce, 2nd,							
3x9	do.	10	10	0	—	—	—
Do. do. do. 3x7x12ft.	do.	7	10	0	7	15	0
Do. do. do. 3rd, 3x9 ..	do.	9	10	0	—	—	—
Do. do. do. 3x7x12 ..	do.	7	5	0	7	10	0
Do. do. Bright Yellow							
Pine, 2nd, 3x11x13ft.	do.	20	0	0	—	—	—
Do. do. do. 3rd, do. ..	do.	12	0	0	—	—	—
Do. Montreal, Red Pine,							
2nd, do.	do.	10	10	0	10	15	0
Battens, all kinds	do.	6	5	0	12	5	0
Scantlings	do.	6	1	0	9	15	0
Flooring Boards in pre-							
pared, 1st	per square	0	11	9	0	12	0
Do. 2nd	do.	0	8	0	0	11	0
Do. 3rd, &c.	do.	0	7	9	0	8	6
HARD WOODS.							
Ash, Quebec	per load	3	12	6	—	—	—
Birch, Miramichi, Planks,							
3x5 to 16in.	per cu. ft.	0	0	11	—	—	—
Box, Turkey	per ton	15	0	0	20	0	0
Cedar, Cuba	per ft. sup.	0	0	4	—	—	—
Do. Honduras	do.	0	0	4	—	—	—
Do. Tobasco	do.	0	0	5	—	—	—
Elm, Quebec	per load	4	2	6	—	—	—
Mahogany, Average Price							
for Cargo, Honduras ..	per ft. sup.	0	0	6	—	—	—
Do. African	do.	0	0	4	—	—	—
Do. St. Domingo	do.	0	0	3	—	—	—
Do. Cuba	do.	0	0	3	—	—	—
Do. Lagos	do.	0	0	4	—	—	—
Do. Benin	do.	0	0	4	—	—	—
Do. Tobasco	do.	0	0	7	—	—	—
Oak, Libau, Crown							
Wainscot logs	per load	2	15	0	—	—	—
Do. Fiume round logs ..	do.	3	7	0	—	—	—
Do. Quebec	do.	4	10	0	—	—	—
Teak, Rangoon, planks ..	do.	8	0	0	15	10	0
Do. do. logs	do.	11	5	9	—	—	—

Complete List of Contractions Open.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
BUILDING:			
Feb. 25	Aston Manor, near Birmingham—Urinal	Corporation	Borough Engineer, Council House, Aston Manor.
" 25	East Harting, near Petersfield—Two Cottages	E. Lephard	J. Luff, East Harting Farm, Petersfield.
" 25	Egremont, Cumberland—Alterations and Additions to Farm Buildings	—	J. Smith, Town Hall, Egremont.
" 25	Kelso, Scotland—Police Station	—	P. S. Darling, County Clerk, Kelso.
" 25	Roch, Fens—Vestry	—	D. E. Thomas, Architect, Victoria Place, Haverfordwest.
" 25	Salford—Cottages, Houses and Shops	Corporation	Borough Engineer, Town Hall, Salford.
" 25	Twickenham—Cement	Urban District Council	F. W. Pearce, Surveyor, Town Hall, Twickenham.
" 25	Rainhill, Lancs—Two Asylum Wards	Asylums Board	J. Gornal, Clerk, Clerk's Office, Asylums Board, Lancashire.
" 25	Stradbroke, Suffolk—Police Station	East Suffolk County Council	H. Miller, 16 Museum Street, Ipswich.
" 25	Woolwich—Cement	Borough Council	F. Sumner, Borough Engineer, Maxey Road, Plumstead.
" 25	Ballyhea, Charleville, co. Cork—Completion of House	Rev. E. Morton	B. E. F. Sheehy, 57 George Street, Limerick.
" 25	London, N.E.—Lime and Portland Cement	Hackney Borough Council	N. Scorgie, Borough Engineer, Town Hall, Hackney, N.E.
" 25	Pembroke—Vestry	—	D. E. Thomas, Architect, Victoria Place, Haverfordwest.
" 26	Salford—Cement	Tramways Committee	Tramway General Offices, 32 Blackfriars Street, Salford.
" 26	Eastleigh—Church	—	G. Truckel, 64 The Crescent, Eastleigh.
" 26	Talgarth—Two Cottages	Brecon Asylum Committee	J. H. Evans, Clerk, Visiting Committee, Talgarth.
" 26	Talgarth—Farm Buildings	Brecon Asylum Committee	J. H. Evans, Clerk, Visiting Committee, Talgarth.
" 26	Bowerham, Lancaster—Shop and House	E. Williams	J. Parkinson, 67 Church Street, Lancaster.
" 26	Camborne, Cornwall—Two Shops and House	Mrs. Faulk	C. Richards, Pendarves Street, Tuckingmill.
" 26	Halifax—Extensions to Engineering Works	Stead Brothers	T. Kershaw, Architect, Lancs and Yorks Bank Chambers, Halifax.
" 26	Llandaff, Wales—Church	Building Committee	D. Pugh Jones, Architect, Queen's Chambers, Queen St., Cardiff.
" 26	Clitheroe, Lancs—Lime, &c.	Corporation	Borough Surveyor, Clitheroe, Lancs.
" 26	Port Elizabeth, South Africa—Cement	Municipality of Port Elizabeth	Davis & Soper, 54 St. Mary Axe, London, E.C.
" 26	London, N.E.—Refreshment-room and Kitchen	London County Council	Architect's Department, 15 Pall Mall East, S.W.
" 27	Widnes—Church and Schools	—	C. W. D. Joynson, Architect, Wednesbury.
" 27	Manchester—Additions, &c., to School	Education Committee	Education Offices, Deansgate, Manchester.
" 27	Cardiff—Additions, &c., to Bank	—	E. H. Bruton, 119 Queen Street, Cardiff.
" 27	Carlisle—Staging	Workington Bridge and Boiler Co., Ltd.	J. Eden, 58 Bow Street, Workington.
" 27	Elgin—House	—	J. Wittet, Architect, Elgin.
" 27	Eton, Bucks—Fire-Brigade Station	Urban District Council	J. Simmonds, Council Offices, Eton, Bucks.
" 27	Craighberthlydyd, near Treharris, Wales—Sixteen Cottages	Building Club	W. Dowdeswell, Architect, Treharris.
" 27	Harrogate—Cement	Corporation	E. W. Dixon, 14 Albert Street, Harrogate.
" 27	Heaton Norris—Cement	Urban District Council	F. W. Brooke, Clerk, Council Offices, Heaton Moor.
" 27	Swindon—Cement and Lime	Corporation	H. J. Hamp, Borough Surveyor, Town Hall, Swindon.
" 27	Senghenydd, Wales—Police Station	Glamorgan County Council	T. M. Franken, Clerk, County Council Offices, Westgate Street, Cardiff.
" 27	Shotton Colliery, Durham—House, &c.	—	G. Wells, Shotton Colliery, Durham.
" 27	Witham, Essex—Cottage	Urban District Council	F. S. Courtney, 25 Victoria Street, Westminster, S.W.
" 27	London, W.—Boiler-house, &c.	London County Council	R. N. Partridge, 6 Waterloo Place, London, S.W.
" 27	Narborough, near Leicester—Asylum	—	Everard & Pick, Architects, Millstone Lane, Leicester.
" 27	Cockermouth—Alterations to Buildings, &c.	Guardians	W. G. Scott & Co. Architects, Victoria Buildings, Workington.
" 27	Surbiton—Buildings	Urban District Council	J. Bell, Clerk, District Council Offices, Surbiton.
" 27	Earlestown, Lancs—Lime and Brick, &c.	Newton-in-Makerfield U.D.C.	Stores Clerk, Gasworks, Earlestown.
" 27	Eton, Bucks—Fire-Brigade Station	Urban District Council	J. Simmonds, 3 Sheet Street, Windsor.
" 29	Dublin—Lime, &c.	—	Commandant, Royal Irish Constabulary Depot, Phoenix Park, Dublin.
" 29	Halifax—Lime and Cement	Corporation	J. Lord, Borough Engineer, Town Hall, Halifax.
" 29	London, S.E.—Conveniences	London County Council	Genl. Section, Architect's Dept., County Hall, Spring Gardens, S.W.
" 29	London, E.—Workhouse Building	Guardians	F. J. Tootel, 74 Vallance Road, Whitechapel, N.E.
" 29	Auchtermuchty, Scotland—School Works	—	W. Birrell, 200 High Street, Kirkcaldy.
" 29	Darlington—Fire Station	Corporation	G. Winter, Borough Surveyor, Town Hall, Darlington.
" 29	Limerick—Fifty Cottages	Thomond Artizans' Dwellings Co., Ltd.	J. F. Power, Secretary, Carr Street, Limerick.
" 29	Rhymney, Wales—Stables, &c.	Urban District Council	W. L. Marks, 61 High Street, Rhymney, Wales.
" 29	Truro—School, &c.	—	W. Timney, Nancewath, Truro.
" 29	King's Heath and Selby Oak, near Birmingham—Bricks, Cement, Lime, &c.	Urban District Council	Surveyor, 23 Valentine Road, King's Heath.
" 29	Southend-on-Sea—Bricks, Cement and Lime	Corporation	E. J. Elford, Borough Surveyor, Southend-on-Sea.
" 29	Beddau, near Caerphilly—Six Houses	—	A. O. Evans, Architect, Pontypridd.
Mar. 1	Wolverhampton—Cement and Lime	Corporation	G. Green, Borough Engineer, Town Hall, Wolverhampton.
" 1	Cowley, near Uxbridge—Passenger Station	Great Western Railway Co.	Engineer, Paddington Station, London.
" 1	Paignton, Devon—Waiting-rooms	Great Western Railway Co.	Engineer, Paddington Station, London.
" 1	Greenford, Middlesex—Seven Houses	Great Western Railway Co.	Engineer, Paddington Station, London.
" 1	Tottenham—Offices and Fire Station	Urban District Council	W. H. Prescott, 712 High Road, Tottenham.
" 1	Bedlington, Wales—Twenty Houses	Building Club	P. V. Jones, Architect, Hengoed.
" 1	Cork—Cross	Cork Soldiers' Memorial Committee	W. H. Hill & Son, 28 South Mall, Cork.
" 1	Kilmarnock—Slaters' Work	Electric Committee	R. Blackwood, Burgh Surveyor, Market Bridge, Kilmarnock.
" 1	London, E.C.—Stabling	Shoreditch Borough Council	J. R. Dixon, Borough Surveyor, Town Hall, Old Street, E.C.
" 1	New Tredegar, Wales—Business Premises	J. Pruss	G. Kenshole, Architect, Station Road, Bargoed.
" 1	Preston, Lancs—Rebuilding, &c.	County Council	County Bridgmaster, Preston.
" 1	London, S.E.—Cement and Lime	Deptford Borough Council	V. Orchard, 20 Fanner's Hill, Deptford, S.E.
" 1	Margate—Cement	Town Council	E. A. Borg, Borough Surveyor, Town Hall, Margate.
" 1	Derby—Bricks, Cement and Lime	Corporation	J. Ward, Borough Surveyor, Municipal Offices, Babington Lane, Derby.
" 2	Blackpool—Shelters	Corporation	J. S. Brodie, Borough Surveyor, Town Hall, Blackpool.
" 2	Newcastle-upon-Tyne—Offices	North-Eastern Railway Co.	W. Bell, Company's Architect, Central Station, Newcastle.
" 2	Wolborough—Restoration Works	Rector and Churchwardens	W. Rowell, 2 St. Paul's Road, Newton Abbot.
" 2	Sutton, Surrey—Cement and Bricks	Urban District Council	C. C. Smith, Surveyor, Municipal Offices, Sutton.
" 2	London, S.E.—Hospital	Metropolitan Asylums Board	T. D. Mann, Clerk, Board's Offices, Embankment, E.C.
" 2	Fulham—Bricks, Lime and Cement	Borough Council	R. M. Prescott, Town Clerk, Town Hall, Fulham.
" 2	London, N.—Lime, Cement, and Bricks	Hampstead Borough Council	Borough Engineer, Town Hall, Haverstock Hill, N.W.
" 2	Southgate—Cement	Urban District Council	W. M. Ellenor, Clerk, Council Offices, Palmer's Green, N.
" 2	London, S.E.—Corridor at Schools	Lambeth Guardians	W. Thurnall, Guardians' Offices, Brook St., Kennington Rd., S.E.
" 3	London—Repairing Police Stations, &c.	Receiver for Metropolitan Police	Police Surveyor, New Scotland Yard, S.W.
" 3	Norwich—Public Convenience	Corporation	A. E. Collins, City Engineer, Guildhall, Norwich.
" 3	Buxton—Post Office	Commissioners of H.M. Works, &c.	Secretary, H.M. Office of Works, Storey's Gate, London, S.W.
No date	London, W.—Lime, Cement, Bricks, &c.	Paddington Borough Council	A. W. J. Russell, Town Clerk, Town Hall, Paddington, W.
ENGINEERING:			
Feb. 25	London, N.—Electrical Stores	Islington Borough Council	W. F. Dewey, Town Clerk, Town Hall, Upper Street, N.
" 25	Cheshunt—Plating Wheels	Urban District Council	R. H. Jeffes, Engineer, Manor House, Cheshunt.
" 25	Walton-on-the-Naze—Groynes	Urban District Council	H. W. Gladwell, High Street, Walton-on-the-Naze.
" 25	Greenock—Electric Generator	Corporation	J. A. Robertson, Burgh Elec. Engineer, Hunter Place, Greenock.
" 25	London, W.—Alternator, &c.	Ealing Corporation	J. D. Knight, Borough Electrical Engineer, Electricity Works, South Ealing, W.
" 25	Keighley—Reservoir, &c.	—	B. Hopkinson & Co., Engineers, Craven Bank Chambers, Keighley.
" 25	Nantwich—Waterworks	Rural District Council	J. A. Davenport, 152 Hospital Street, Nantwich.
" 26	Hull—Bridge Work	Corporation	A. E. White, City Engineer, Town Hall, Hull.
" 26	Sunderland—Crane, &c.	Corporation	J. F. C. Snell, Borough Electrical Engineer, Town Hall, Sunderland.
" 26	Christiana—Telegraph and Telephone Material	Norwegian State Railways	Styrelsen Expeditiønskontor, Statsbanerne, Christiania.
" 26	Stourbridge—Electrical Plant	Urban District Council	J. B. Clarke, Electrical Engineer, Town Hall, Stourbridge.
" 27	Hitchin—Hot-Water Supply, &c.	Three Counties Asylum	R. E. Middleton, 17 Victoria Street, S.W.
" 27	St. Anne's-on-Sea, Lancs—Dynamo	Urban District Council	J. H. Clothier, Engineer, Electricity Works, St. Anne's-on-Sea.
" 27	Kirkcaldy—Tramway Works	Corporation	O. F. Francis, Burgh Electrical Engineer, Electricity Works, Victoria Road, Kirkcaldy.
" 28	Chelmsford—Waterworks	Corporation	C. Brown, 16 London Road, Chelmsford.
" 28	Tipton, Staffs—Heating Apparatus	Urban District Council	A. Long, 21 New Street, West Bromwich.
" 29	Aberdeen—Renewal of Bridge	Caledonian Railway Co.	T. Fergusson, 177 Union Street, Aberdeen.
" 29	Midhurst, Sussex—Drainage, &c.	Rural District Council	J. Taylor, 303 S. Crimp, 27 Great George Street, Westminster.
" 29	Canbushang, Scotland—Electric Lighting	Canbushang County Council	Hunter & Jack, 101 St. Vincent Street, Glasgow.
" 29	Halifax—Electrical Stores	Corporation	W. M. Rogerson, Boro Electrical Engr., Foundry St., Halifax.
Mar. 1	Manchester—Electric Hoists and Cranes	Dock & Warehouse Extension Co.	W. H. Hunter, 41 Spring Gardens, Manchester.

DATE OF DELIVERY.		WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
ENGINEERING—cont.				
Mar.	1	Dublin—Engines	Gt Northern Rly. Co. (Ireland)	T. Morrison, Secretary, Amiens Street Terminus, Dublin.
"	1	Caldbeck—Water-supply Works	Wigton Rural District Council..	W. Brown, Surveyor, Kildare, Wigton.
"	2	Fulham—Electrical Stores	Borough Council	R. M. Prescott, Clerk, Town Hall, Fulham.
"	3	Cardiff—Reservoir	Corporation	C. H. Priestley, Waterworks Engineer, Town Hall, Cardiff.
"	3	Blaydon-on-Tyne—Footbridge	Urban District Council	G. Syon, Surveyor, Council Offices, Blaydon-on-Tyne.
"	4	Mountain Ash, Wales—Gasholder, &c.	Urban District Council	Corbett, Woodall & Son, Civil Engineers, Palace Chambers, Bridge Street, Westminster, S.W.
"	5	Coventry—Tramways	New General Traction Co., Ltd.	I. E. Winslow, 30 Bishopsgate Street Within, E.C.
"	5	Kidderminster—Water-supply Works	Joint Hospital Committee	Willcox & Raikes, Union Chambers, 63 Temple Row, Birmingham.
"	7	Dartford—Heating, &c.		R. Mardant, 28 Theobald's Road, London, W.C.
IRON AND STEEL:				
Feb.	25	London, N.—Iron and Steel.. .. .	Islington Borough Council	W. F. Dewey, Town Clerk, Town Hall, Upper Street, N.
"	25	London, N.E.—Stores	Hackney Borough Council	Stores Clerk, Gasworks, Earlestown.
"	25	Bury Port, Wales—Water-main Pipes	Urban District Committee	J. B. Jones, Surveyor, Council Offices, Bury Port.
"	26	Clitheroe, Lancs—Ironmongery	Corporation	Borough Surveyor, Clitheroe, Lancs.
"	26	Port Elizabeth, South Africa—Steel Pipes, &c.	Municipality	Davis & Soper, 54 St. Mary Axe, London, E.C.
"	26	Salford—Iron and Steel	Tramways Committee	N. Scorgie, Borough Engineer, Town Hall, Hackney, N.E.
"	26	Christiania—Rails, &c.	Norwegian State Railways	Commercial Intelligence Branch, Board of Trade, 50 Parliament Street, S.W.
"	27	Earlestown, Lancs—Ironmongery	Newton-in-Makerfield U.D.C.	Tramway General Offices, 32 Blackfriars Street, Salford.
"	27	Glasgow—Pipes	Corporation	J. R. Sutherland, 45 John Street, Glasgow.
"	27	Swindon—Ironmongery	Corporation	F. J. Hamp, Borough Surveyor, Town Hall, Swindon.
"	29	Sandal, Wakefield—Pipes, &c.	Urban District Council	F. Massie, Tetley House, Wakefield.
"	29	Snowdon, Wales—Piping		Harper Brothers, 13 St. Helen's Place, London, E.C.
"	29	London, N.W.—Ironmongery	Hendon Urban District Council	S. S. Grimley, Engineer, Council Offices, Hendon.
"	29	Southend-on-Sea—Tools	Corporation	E. J. Elford, Borough Surveyor, Southend-on-Sea.
"	29	Blackburn—Iron	Elec. & Tramways Committee	A. S. Giles, Engineer, Corporation Electricity Works, Jubilee Street, Blackburn.
"	29	Halifax—Stores	Corporation	J. Lord, Borough Engineer, Town Hall, Halifax.
Mar.	1	Edinburgh—Roofs, &c.	Gas Commissioners	W. R. Herring, Chief Engineer, New Street Works, Edinburgh.
"	1	Wolverhampton—Stores	Corporation	G. Green, Borough Engineer, Town Hall, Wolverhampton.
"	1	Ratcliffe, Lancs—Pipes, &c.	Gas Committee	J. Braddock, Secretary, Gas Offices, Radcliffe.
"	1	London, S.E.—Ironmongery	Deptford Borough Council	V. Orchard, 20 Tanner's Hill, Deptford, S.E.
"	1	Margate—Ironmongery, Tools, &c.	Town Council	E. A. Borg, Borough Surveyor, Town Hall, Margate.
"	1	Derby—Bar Iron, &c.	Corporation	J. Ward, Boro' Surveyor, Municipal Offices, Babington Lane, Derby.
"	2	Sutton, Surrey—Ironmongery	Urban District Council	C. C. Smith, Engineer, Municipal Offices, Sutton.
"	2	Birmingham—Iron and Steel		Superintendent, Montague Street Wharf, Birmingham.
"	2	Southgate—Ironmongery	Urban District Council	W. M. Ellenor, Clerk, Council Offices, Palmers Green, N.
"	4	Barking, Essex—Ironmongery	Urban District Council	H. Hargreaves, Clerk, Public Offices, Barking, Essex.
"	4	Bristol—Ironmongery, &c.		City Valuer, Council House, Broad Street, Bristol.
"	7	Ilford, Essex—Iron Castings	Urban District Council	H. Shaw, Town Hall, Ilford.
"	7	Newcastle-upon-Tyne—Iron and Steel	Tramways Committee	Tramways Department, Head Office, Manors, Newcastle.
"	7	Mortlake—Ironmongery, &c.	Barnes Urban District Council	G. B. Tones, Surveyor, Council Offices, High St., Mortlake, S.W.
"	7	London, W.—Tools and Ironmongery	St. Marylebone Borough Council	J. Wilson, Town Clerk, Town Hall, St. Marylebone, W.
"	8	Batley, Yorks—Ironmongery	Town Council	O. J. Kirby, Borough Surveyor, Branch Road, Batley.
"	12	Wrexham—Stores	Town Council	Borough Electrical Engineer, Wrexham.
"	18	Wimbledon—Tools, &c.	Urban District Council	Engineer, Council Offices, Wimbledon.
No date		London, W.—Iron and Steel	Paddington Borough Council	A. W. J. Russell, Town Clerk, Town Hall, Paddington.
PAINTING AND PLUMBING:				
Feb.	25	Stafford—Painting	Burial Board Committee	W. Blackshaw, Borough Engineer, Borough Hall, Stafford.
"	25	Glasgow—Paints, &c.	Corporation	Lighting Department, 52 College Street Glasgow.
"	25	Mickleover, Derby—Painting	County Asylum Committee	Mr. McWilliams, Engineer, County Asylum, Derby.
"	25	London, N.E.—Paints and Oils, Plumbers' Work, &c.	Hackney Borough Council	N. Scorgie, Borough Engineer, Town Hall, Hackney, N.E.
"	26	Salford—Paints and Oils	Tramways Committee	Tramway General Offices, 32 Blackfriars Street, Salford.
"	27	Earlestown, Lancs—Painting Materials	Newton-in-Makerfield U.D.C.	Stores Clerk, Gasworks, Earlestown.
"	27	Swindon—Oils, Paints, &c.	Corporation	H. J. Hamp, Borough Surveyor, Town Hall, Swindon.
"	29	Manchester—Oils and Paints	Rivers Committee	Secretary, Rivers Department, Town Hall, Manchester.
"	29	King's Heath and Selly Oak, nr. Birmingham—Oils and Paints	King's Norton and Northfield Urban District Council	Surveyor, 23 Valatine Road, King's Heath.
"	29	Blackburn—Paints, Varnishes, &c.	Elec. & Tramways Committee	A. S. Giles, Engineer, Corporation Electricity Works, Jubilee Street, Blackburn.
"	29	Truro—Painters' Work	City Council	M. Lea, City Surveyor, Truro.
Mar.	1	Derby—Paints, Oils, &c.	Corporation	J. Ward, Boro' Surveyor, Municipal Offices, Babington Lane, Derby.
"	1	London, S.E.—Oils, Paints, Colours, &c.	Deptford Borough Council	V. Orchard, 20 Tanner's Hill, Deptford, S.E.
"	1	Margate—Paints, Oils, Colours, &c.	Town Council	E. A. Borg, Borough Surveyor, Town Hall, Margate.
"	1	Crumlin, Antrim, Ireland—Painting, &c.	Guardians	Mr. Corkin, Crumlin.
"	2	York—Painting	North Eastern Railway Co.	C. A. Harrison, Engineer, Central Station, Newcastle-upon-Tyne.
"	2	Sutton, Surrey—Oils and Paints	Urban District Council	C. C. Smith, Engineer, Municipal Offices, Sutton.
"	2	Southgate—Paints and Oils	Urban District Council	W. N. Ellenor, Clerk, Council Offices, Palmers Green, N.
"	2	Fulham—Plumbers' Work, &c.	Borough Council	R. M. Prescott, Town Clerk, Town Hall, Fulham.
No date		London, W.—Painting Materials	Paddington Borough Council	A. W. J. Russell, Town Clerk, Town Hall, Paddington.
ROADS AND CARTAGE:				
Feb.	25	Woolwich—Road Material	Borough Council	F. Sumner, Borough Engineer, Maxey Road, Plumstead.
"	25	Ramsgate—Making-up	Corporation	T. G. Taylor, Borough Surveyor, Albion House, Ramsgate.
"	25	London, N.—Granite	Islington Borough Council	W. F. Dewey, Town Clerk, Town Hall, Upper Street, N.
"	25	Walton-on-the-Naze—Making-up, &c.	Urban District Council	H. W. Gladwell, District Surveyor, Surveyor's Office, High Street Walton-on-Naze.
"	25	London, N.E.—Materials	Hackney Borough Council	N. Scorgie, Borough Engineer, Town Hall, Hackney, N.E.
"	25	Aston Manor, near Birmingham—Roadworks	Corporation	Borough Engineer, Council House, Aston Manor.
"	25	Brixworth, Northants—Granite	Rural District Council	Clerk, Council Offices, Brixworth.
"	25	Gateshead—Street Works		J. Bower, Borough Engineer, Town Hall, Gateshead.
"	25	Wheatenurst, Gloucester—Stone, &c.	Rural District Council	R. E. Stuart, Clerk, Bedford Street, Stroud.
"	25	Salford—Street, &c., Work		Borough Engineer, Town Hall, Salford.
"	25	Twickenham—Granite	Urban District Council	F. W. Pearce, Surveyor, Town Hall, Twickenham.
"	26	Southend-on-Sea—Granite Setts	Corporation	E. J. Elford, Borough Engineer, Southend-on-Sea.
"	26	Salford—Materials	Tramways Committee	Tramway General Offices, 32 Blackfriars Street, Salford.
"	27	Chelmsford—Materials, &c.	Rural District Council	H. G. Warne, Surveyor, Avenue Chambers, Market Rd., Chelmsford.
"	27	Cockermouth—Road Widening	Rural District Council	J. P. Wilson, Engineer, Cockermouth.
"	27	Huntington—Road Materials	County Council	H. Leete, County Surveyor, Huntingdon.
"	27	Swinton, Lancs—Paving, &c.	Urban District Council	H. Entwistle, Surveyor, Council Offices, Swinton.
"	27	Beverley—Whinstone	East Riding County Council	County Surveyor, Beverley.
"	27	Thrapston, Northants—Granite and Slag	Rural District Council	G. Hunnybun, Clerk, Thrapston.
"	27	Heaton Norris—Flags and Kerbs	Urban District Council	F. W. Brooke, Clerk, Council Offices, Heaton Moor.
"	27	Swindon—Road Stone	Corporation	H. J. Hamp, Borough Surveyor, Town Hall, Swindon.
"	29	Bolton-upon-Dearne, Yorks—Materials	Urban District Council	J. L. Hawksworth, Clerk, Council Offices, Bolton-upon-Dearne.
"	29	Leeds—Road Works	Rural District Council	E. J. Silcock, 10 Park Row, Leeds.
"	29	London, S.E.—Kerbing, &c.	Lewisham Borough Council	Surveyor, Town Hall, Catford.
"	29	New Shoreham, Cheshire—Road Materials, &c.	Urban District Council	H. W. Corrie, Surveyor, Council Offices, Lower Bebington.
"	29	Waterloo, Lancs—Private Street Works	Steyning West R.D.C.	E. Cripps, Clerk, Council Offices, New Shoreham, Sussex.
"	29	King's Heath and Selly Oak, near Birmingham—Kerb and Paving Setts	Urban District Council	F. W. Yates, Surveyor, Town Hall, Waterloo.
"	29	Southend-on-Sea—Granite	King's Norton and Northfield U.D.C.	Surveyor, 23 Valatine Road, King's Heath.
"	29	London, N.W.—Granite	Corporation	E. J. Elford, Borough Surveyor, Southend-on-Sea.
"	29	Hanwell, W.—Making-up Road	Hendon U.D.C.	S. S. Grimley, Surveyor, Council Offices, Hendon.
"	29	Halifax—Materials	Urban District Council	P. J. Dennis, Clerk, Council Offices, Church Rd. West, Hanwell, W.
"	29	Worcester—Road Stone	Corporation	J. Lord, Borough Engineer, Town Hall, Halifax.
Mar.	1	York—Road Materials, &c.	Highways & Bridges Committee	J. H. Garrett, County Road Surveyor, Shirehall, Worcester.
"	1	Bishop's Stortford—Paving	Corporation	A. Creer, City Surveyor, Guildhall, York.
"	1	Wolverhampton—Slag and Kerbs	Urban District Council	R. S. Scott, 7 North Street, Bishop's Stortford.
"	1	Middlesex—Broken Granite	Corporation	G. Green, Borough Engineer, Town Hall, Wolverhampton.
"	1	Middlesex—Granite	County Council	H. T. Wakelam, County Engr., Middlesex Guildhall, Westminster.
"	1	Tottenham—Making-up Roads	County Council	H. T. Wakelam, County Engr., Middlesex Guildhall, Westminster.
"	1	London, S.E.—Granite	Urban District Council	W. H. Prescott, 712 High Road, Tottenham.
"	1	Margate—Flags, Kerb, &c.	Deptford Borough Council	V. Orchard, 20 Tanner's Hill, Deptford, S.E.
"	1	Kirkby-in-Ashfield—Street Improvement Works	Town Council	E. A. Borg, Borough Surveyor, Town Hall, Margate.
"	1		Urban District Council	W. Dodsley, Surveyor, Stockwell Gate, Mansfield.

Complete List of Contracts Open *continued.*

DATE OF DELIVERY	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
ROADS AND CARTAGE—<i>cont.</i>			
Mar. 1	Thorne, near Doncaster—Materials, &c.	Rural District Council	G. Kenyon, Clerk, Thorne.
" 1	Tredgar, Wales—Street Improvements	Urban District Council	W. L. Roach, Surveyor, Bedwelty House, Tredgar.
" 1	Derby—Granite, &c.	Corporation	J. Ward, Borough Surv., Municipal Offices, Babington Lane, Derby.
" 2	Sutton, Surrey—Granite Setts, &c.	Urban District Council	C. C. Smith, Surveyor, Municipal Offices, Sutton.
" 2	Headington, Oxon.—Materials	Rural District Council	J. C. Coates, District Surv., Hartfield Cottage, New Headington.
" 2	Millom, Cumberland—Materials, &c.	Urban District Council	W. T. Lawrence, Clerk, Council Offices, Millom.
" 2	Northampton—Materials	Rural District Council	W. Tomalin 14 Guilthall Road, Northampton.
" 2	Litherland, Lancs.—Road and Passage Works	Urban District Council	A. H. Carter 25 Sefton Road, Litherland.
" 2	London, N.W.—Artificial Footway Paving	Hampstead Borough Council	Borough Engineer, Town Hall, Haverstock Hill, N.W.
" 2	Fulham—Broken Granite	Borough Council	J. M. Prescott, Town Clerk, Town Hall, Fulham
" 3	Lutterworth—Granite, &c.	Monks Kirby R.D.C.	J. B. Holroyd, District Surveyor, Lutterworth.
" 4	Barking, Essex—Granite	Urban District Council	H. Hargreaves, Clerk, Public Offices, Barking, Essex.
" 5	Colchester—Materials, &c.	Roads and Drainage Committee.	H. Goodyear, Borough Surveyor, Town Hall, Colchester.
" 7	London, W.—Materials	Metropolitan Borough	J. Wilson, Town Clerk, Town Hall, St. Marylebone, W.
" 7	Mortlake—Granite	Barnes U.D.C.	G. B. Tomes, Surveyor, Council Offices, High St., Mortlake, S.W.
" 7	Ilford, Essex—Materials	Urban District Council	H. Shaw, Borough Surveyor, Town Hall, Ilford, Essex.
" 8	Batley, Yorks—Broken Granite	Town Council	O. J. Kirby, Borough Surveyor, Branch Road, Batley.
" 8	Bath—Works and Materials	Urban Sanitary Authority	C. R. Fortune, City Surveyor, Guildhall, Bath.
" 9	Birmingham, Notts—Materials	Rural District Council	R. H. Beaumont, Clerk, Market Place, Birmingham.
" 9	Canterbury—Materials	Roads and Survey Committee	A. C. Turley, City Surveyor, Guildhall Street, Canterbury.
" 10	Tadcaster—Materials, &c.	Rural District Council	T. Scott, Council's Surveyor, Aberford, near Leeds.
" 12	Wrexham—Materials	Town Council	Borough Surveyor, Wrexham.
" 14	Middlesex—Road Widening	County Council	H. T. Wakelam, County Engr., Middlesex Guildhall, Westminster.
" 18	Wimbledon—Granite	Urban District Council	Surveyor, Council Offices, Wimbledon.
No date	London, W.—Materials	Metropolitan Borough	A. W. J. Russell, Town Clerk, Town Hall, Paddington.
SANITARY:			
Feb. 25	London, N.—Sewers and Drains	Islington Borough Council	W. F. Dewey, Town Clerk, Town Hall, Upper Street, N.
" 25	Woolwich—Disinfectants	Borough Council	F. Sumner, Borough Engineer, Maxey Road, Plumstead.
" 25	London, N.E.—Stoneware Pipes, &c.	Hackney Borough Council	N. Scorgie, Borough Engineer, Town Hall, Hackney, N.E.
" 25	Aston Manor, near Birmingham—Sewerage Works	Corporation	Borough Engineer, Council House, Aston Manor.
" 25	Twickenham—Stoneware Drain Pipes	Urban District Council	F. W. Pearce, Surveyor, Town Hall, Twickenham.
" 26	Clitheroe, Lancs.—Works and Materials	Corporation	Borough Surveyor, Clitheroe, Lancs.
" 27	Bamber Bridge, Lancs.—Removal of Nightsoil, &c.	Walton-le-Dale U.D.C.	W. S. Woodcock, Clerk, Council Offices, Bamber Bridge.
" 27	Heaton Norris—Stoneware Pipes	Urban District Council	F. W. Brooke, Clerk, Council Offices, Heaton Moor.
" 27	Swindon—Disinfectants	Corporation	H. J. Hamp, Borough Surveyor, Town Hall, Swindon.
" 27	Beddington, Croydon—Scavenging	Croydon R.D.C.	E. J. Gowen, Clerk, Town Hall, Croydon.
" 27	Merton, Surrey—Scavenging	Croydon R.D.C.	E. J. Gowen, Clerk, Town Hall, Croydon.
" 27	Wallington, Croydon—Scavenging, &c.	Rural District Council	E. J. Gowen, Clerk, Town Hall, Croydon.
" 29	Halifax—Stone Pipes, &c.	Corporation	J. Lord, Borough Engineer, Town Hall, Halifax.
" 29	Wetherby, Yorks—Sewerage Works	Rural District Council	Richardson & Hartley, Engineers, East Parade Chambers, Leeds.
" 29	London, N.W.—Disinfectants	Hendon U.D.C.	S. S. Grimley, Surveyor, Council Offices, Hendon.
" 29	Rangor, Ireland—Sewer	Urban District Council	E. L. Woods, Town Surveyor, Bangor, Ireland.
" 29	Halifax—Sewer	Highways Committee	J. Lord, Borough Engineer, Town Hall, Halifax.
" 29	King's Heath and Selly Oak, nr. Birmingham—Disinfectants, Pipes, &c.	King's Norton and Northfield U.D.C.	Surveyor, 23 Valatine Road, King's Heath.
" 29	Southend-on-Sea—Granite	Corporation	E. J. Elford, Borough Surveyor, Southend-on-Sea.
Mar. 1	Derby—Disinfectants	Corporation	J. Ward, Borough Surveyor, Babington Lane, Derby.
" 1	Lanchester, Durham—Sewerage Works	Rural District Council	J. R. Lupton, Surveyor, Lanchester.
" 1	Waterloo, near Liverpool—Scavenging	Urban District Council	F. S. Yates, Surveyor, Town Hall, Waterloo.
" 1	Margate—Sanitary Pipes, &c.	Town Council	E. A. Borg, Borough Surveyor, Town Hall, Margate.
" 1	Wolverhampton—Stoneware Pipes	Corporation	G. Green, Borough Engineer, Town Hall, Wolverhampton.
" 1	London, N.—Sewer	Hornsey Town Council	E. J. Lovegrove, Municipal Offices, Southwood Lane, Highgate, N.
" 1	Bromley, Kent—Sewer, &c.	Rural District Council	A. Williams & Sons, 14 Victoria Street, Westminster, S.W.
" 2	Headcorn, Kent—Sewers, &c.	Hollingbourne R.D.C.	Fairbank & Son, Engineers, Lendal Chambers, York.
" 2	Fulham—Drain Pipes, &c.	Borough Council	R. M. Prescott, Town Clerk, Town Hall, Fulham.
" 2	London, N.W.—Disinfectants	Hampstead Borough Council	Borough Engineer, Town Hall, Haverstock Hill, N.W.
" 2	Sutton, Surrey—Disinfectants	Urban District Council	C. C. Smith, Surveyor, Municipal Offices, Sutton.
" 2	Southgate—Stoneware Pipes	Urban District Council	W. M. Ellenor, Clerk, Council Offices, Palmers Green, N.
" 4	Parking, Essex—Disinfectants	Urban District Council	H. Hargreaves, Clerk, Public Offices, Barking, Essex.
" 5	Coulson, Croydon—Scavenging, &c.	Croydon R.D.C.	E. J. Gowen, Clerk, Town Hall, Croydon.
" 5	Colchester—Lime	Roads and Drainage Committee	H. Goodyear, Borough Surveyor, Town Hall, Colchester.
" 7	Ilford, Essex—Stoneware Pipes	Urban District Council	H. Shaw, Town Hall, Ilford, Essex.
" 7	London, W.—Stoneware Pipes	St. Marylebone Borough Council	J. Wilson, Town Clerk, Town Hall, St. Marylebone, W.
" 8	Bath—Sewer Pipes, &c.	Urban Sanitary Authority	City Surveyor, Town Hall, Bath.
" 8	Batley, Yorks—Drain Pipes	Town Council	O. J. Kirby, Borough Surveyor, Branch Road, Batley.
" 12	Wrexham—Sanitary Materials	Town Council	Borough Surveyor, Wrexham.
No date	London, W.—Disinfectants	Paddington Borough Council	A. W. J. Russell, Town Clerk, Town Hall, Paddington.
TIMBER:			
Feb. 25	Woolwich—Timber	Borough Council	F. Sumner, Borough Engineer, Maxey Road, Plumstead.
" 25	London, N.—Timber	Islington Borough Council	W. F. Dewey, Town Clerk, Town Hall, Upper Street, N.
" 25	London, N.E.—Timber	Hackney Borough Council	N. Scorgie, Borough Engineer, Town Hall, Hackney, N.E.
" 26	Salford—Timber	Tramways Committee	Tramway General Offices, 32 Blackfriars Street, Salford.
" 27	Swindon—Timber	Corporation	H. J. Hamp, Borough Surveyor, Town Hall, Swindon.
" 29	Halifax—Timber	Corporation	J. Lord, Borough Engineer, Town Hall, Halifax.
" 29	Southend-on-Sea—Timber	Corporation	E. J. Elford, Borough Surveyor, Southend-on-Sea.
" 29	King's Heath and Selly Oak, near Birmingham—Timber	King's Norton and Northfield U.D.C.	Surveyor, 23 Valatine Road, King's Heath.
" 29	Blackburn—Timber	Elec. & Tramways Committee	A. S. Giles, Engr., Corporation Elec. Works, Jubilee St., Blackburn.
Mar. 1	Derby—Timber	Corporation	J. Ward, Borough Surveyor, Babington Lane, Derby.
" 1	London, S.E.—Timber	Deptford Borough Council	V. Orchard, 20 Tanner's Hill, Deptford, S.E.
" 1	Margate—Timber	Town Council	E. A. Borg, Borough Surveyor, Town Hall, Margate.
" 2	London, N.W.—Timber	Hampstead Borough Council	Borough Engineer, Town Hall, Haverstock Hill, N.W.
" 2	Fulham—Timber	Borough Council	R. M. Prescott, Town Clerk, Town Hall, Fulham.
" 3	Birmingham—Timber	Superintendent, Montague Street Wharf, Birmingham.	W. H. Hunter, 41 Spring Gardens, Manchester.
" 4	Runcorn—Timber Wharf	Manchester Ship Canal Co.	City Valuer, Council House, Broad Street, Bristol.
" 4	Bristol—Timber		J. Wilson, Town Clerk, Town Hall, St. Marylebone, W.
" 7	London, W.—Timber	St. Marylebone Borough Council	H. Shaw, Town Hall, Ilford, Essex.
" 7	Ilford, Essex—Timber	Urban District Council	Surveyor, Council Offices, Wimbledon.
" 18	Wimbledon—Timber	Urban District Council	A. W. J. Russell, Town Clerk, Town Hall, Paddington.
No date	London, W.—Timber	Paddington Borough Council	

List of Competitions Open.

DATE OF DELIVERY.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	DEPOSIT REQUIRED FOR CONDITIONS, &c.	BY WHOM ADVERTISED.
Mar. 1	Ilkley—Free Library, &c.	£100, £50, £20.	£1 IS.	F. Hall, Clerk, Council Offices, Ilkley.
" 1	Stockton-on-Tees—Enlargement of Chancel			Holy Trinity Vicarage, Stockton-on-Tees.
" 8	Billerica, Essex—Cottages	£5 5s.		C. E. Lewis, Clerk, Union House, Billericay.
" 31	St. Helens—Two Branch Public Libraries	£20, £40.	£1 IS.	W. H. Anderson, Town Clerk, Town Hall, St. Helens.
" 31	Vienna—Machinery to Lift Boats on Canal	100,000, 75,000 & 50,000 kronen.		Austro-Hungarian Consulate-General, 22 Laurence Pountney Lane E.C.
April 6	Perth—Hospital	£31 10s., £21, £10 10s.		J. Begg, Town Clerk, Perth.
" 8	Malvern—Library	£30, £20, £10.		H. L. Whately, Clerk, Council Offices, Malvern.
" 30	Newcastle-upon-Tyne—Grammar School	£100, £50, £25.	£1 IS.	H. J. Criddle, 2 Collingwood Street, Newcastle-upon-Tyne.
May 9	Barnet—Hospital			C. D. Byfield, 16 High Street, Barnet.

Tenders.

Information from accredited sources should be sent to "The Editor" at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.
Addressed postcards on which lists of tenders may be stated will be sent post free on application to the Manager, BUILDERS' JOURNAL, 6, Great New Street, Fetter Lane, E.C.

Aberystwyth (Wales).—For the erection of an arcade and concert-hall in Terrace Road, Aberystwyth, for Mr. David Phillips. Mr. J. Arthur Jones, architect, 7, Queen's Terrace, Aberystwyth:—
L. Bearne £7,995
Owen Brothers 7,277
D. Williams 6,896
E. Evans 6,800
W. & J. Jones 6,538
J. P. Lewis, Aberdovey 6,280
Edwards Brothers 6,150
E. E. Jenkins* 6,000
* Accepted. [Rest of Aberystwyth.]

Alnwick.—For the erection of workmen's cottages, consisting of twenty-eight houses (of two flats each), in Clayport Gardens, for the Alnwick U.D.C. Mr. J. Wightman Douglas, architect, 49, Bondgate Without, Alnwick:—
Tulley & Sons, Wooler £16,344 11 8
G. Bain, Dunston-on-Tyne 14,667 13 5
Porteus, Guisborough, Yorks 13,870 0 0
McNeill, Gosforth 13,814 0 0
Fordy, Seahouses 13,582 11 9
Davidson & Sons, Berwick 13,368 15 0
R. M. Gibson, Gateshead 13,216 5 4
Muckle Brothers, Rothbury 13,115 8 7
Green Brothers, Warkworth 12,720 0 0
W. Dunn, Roker, Sunderland 12,471 1 0
E. & J. George, Newcastle 12,378 13 1
J. C. Mather, Gateshead-on-Tyne 11,801 0 0
Elliott Brothers,* Preston, Chathill 11,685 0 0
* Accepted. [Architect's estimate, £11,880.]

Clacton-on-Sea.—For alterations to business premises at Clacton-on-Sea, for Mr. A. Nazzolini. Mr. George Gardiner, architect, Clacton-on-Sea:—
H. Smith £138
H. W. Gladwell 120
James McKay* 114
* Accepted.

London, N.W.—For the erection of new offices in Euston Road, London, for the Hearts of Oak Benefit Society. Messrs. Essex, Nichol & Goodman, architects, Colmore House, 21, Waterloo Street, Birmingham. Quantities by Mr. A. T. Tween, 147, Palmerston House, Old Broad Street, London:—

		Extra if granite instead of Portland stone.	Extra if brickwork in Portland cement instead of lime-mortar	Extra if lighting areas glazed bricks.	Extra if wood-block flooring.	Extra if oak joiner's work.
J. C. Wall & Co	£50,252 0 0	£1,200 0 0	£641 ..	£817 0 0	£586 0 ..	£4,051 ..
C. Miskin & Sons	44,000 0 0	1,300 0 0	374 ..	700 0 0	660 0 ..	2,600 ..
Spencer, Santo & Co., Ltd.	43,600 0 0	811 0 0	310 ..	707 0 0	488 0 ..	3,769 ..
J. Smith & Sons, Ltd.	43,493 0 0	385 0 0	495 ..	747 0 0	575 0 ..	3,691 ..
Sabey & Son	43,118 0 0	—	—	—	—	—
Stimpson & Co.	43,000 0 0	900 0 0	372 ..	800 0 0	600 0 ..	2,700 ..
W. Downs	42,973 0 0	725 0 0	375 ..	610 0 0	580 0 ..	3,437 ..
Treasure & Son	42,918 0 0	710 0 0	620 ..	527 0 0	511 0 ..	3,068 ..
A. Kellert & Sons, Ltd.	42,745 0 0	947 0 0	690 ..	1,453 0 0	809 0 ..	3,997 ..
Kirk & Randall	42,490 0 0	1,100 0 0	707 ..	803 0 0	625 0 ..	4,403 ..
G. Parker	42,383 0 0	923 0 0	695 ..	1,446 0 0	795 0 ..	4,058 ..
Martin, Wells & Co., Ltd.	42,295 0 0	897 0 0	416 ..	719 0 0	612 0 ..	2,880 ..
T. H. Kinglerlee & Son	41,972 0 0	1,133 0 0	372 ..	652 0 0	581 0 ..	2,454 ..
G. E. Wallis & Sons	41,884 0 0	750 0 0	434 ..	800 0 0	626 0 ..	6,000 ..
H. Lovatt, Ltd.	41,600 0 0	1,427 0 0	315 ..	553 0 0	503 0 ..	3,068 ..
G. Godson & Sons	41,544 0 0	893 0 0	682 ..	1,277 0 0	782 0 ..	4,134 ..
J. Chessum & Sons	41,480 0 0	811 0 0	310 ..	700 0 0	656 0 ..	4,586 ..
J. Shillitoe & Sons	41,300 0 0	850 0 0	372 ..	695 0 0	542 0 ..	2,300 ..
H. L. Holloway	41,121 0 0	750 0 0	400 ..	635 0 0	500 0 ..	5,000 ..
C. Dearing & Son	41,108 0 0	735 0 0	620 ..	787 0 0	541 0 ..	3,301 ..
Leslie & Co., Ltd.	41,083 0 0	852 0 0	310 ..	665 0 0	578 0 ..	3,667 ..
B. E. Nightingale	40,918 0 0	670 0 0	372 ..	775 0 0	554 0 ..	2,863 ..
W. Lawrence & Sons	40,384 0 0	748 0 0	310 ..	747 0 0	626 0 ..	3,671 ..
Patman & Fotheringham, Ltd.	40,173 0 0	845 0 0	375 ..	532 0 0	570 0 ..	3,055 ..
Hockley & Co.	40,082 17 6	875 8 11	620 ..	6 6 18 1	618 10	2,359 ..
C. G. Hill*	40,000 0 0	840 0 0	620 ..	642 17 7	670 0 ..	2,237 ..
A. N. Coles	39,840 0 0	284 0 0	1,364 ..	880 0 0	719 0 ..	2,249 ..
A. Porter†	39,638 0 0	943 0 0	248 ..	784 0 0	578 0 ..	1,002 ..
F. G. Minter	39,470 0 0	760 0 0	610 ..	910 0 0	590 0 ..	3,226 ..

* Accepted.

† Informal.

[Architect's estimate, £43,000.]

(Continued on p. xx.)

King's Lynn (Norfolk).—For the erection of a new public library. Mr. H. J. Green, architect, 21, Castle Meadow, Norwich:—
Read & Wildbur £4,360 0
J. Medwell 4,340 9
Bardell Brothers 4,298 0
Tash, Langley & Co. 4,150 0
D. Dye 4,072 0
A. F. Foreman 3,887 5
W. F. Smith 3,827 12
[All of King's Lynn.]

London, W.C.—For extension of classrooms and other alterations, together with repairs and painting, at the Foundling Hospital. Mr. John B. Chubb, architect, resident surveyor Quantities by Messrs. C. John Mann & Son, 29, Great George Street, Westminster:—
J. Carmichael £1,920
W. Shepherd 1,876
Todd & Newman 1,853
Higgs & Hill 1,834
Parkinson & Son 1,789
Prestige & Co.* 1,759
* Accepted.

London E.—For alterations and additions at the Jews' Free School, Spitalfields. Mr. Edward Robert Robson, F.S.A., architect, Palace Chambers, Westminster. Quantities by Messrs. John Leaning & Sons, 28, John Street, Bedford Row:—

J. Mowlem & Co., Ltd.	£71,993	£100
J. Garrett & Son	57,697	None.
Cousell Brothers	56,479	259
Holland & Hannen	54,692	170
Foster & Dicksee	54,445	400
F. & H. F. Higgs	53,925	506
Holloway Brothers	53,876	176
F. G. Minter	52,488	None.
G. H. & A. Bywaters	52,395	50
H. Lovatt	52,200	300
E. Lawrence & Son	51,585	50
J. Carmichael	50,575	40

A.—Nett credit for old materials.

London, W.—For rebuilding 111 and 113, Great Titchfield Street. Mr. William Pywell, architect, Hanwell, W. Quantities by Mr. Max Clarke:—
Perkins & Co. £5,129
Whitehead & Co. 4,725
Minter 4,708
W. Wallis 4,699
T. H. Kinglerlee & Son 4,687
J. Carmichael 4,667
B. E. Nightingale* 4,493
* Accepted.

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A BUILDER'S SURVEYOR shortly disengaged. Experienced Taking-off Quantities, Measuring and Adjusting Accounts. Highest references. Management taken. Quantities prepared accurately and quickly.—SURVEYOR, Hill View, The Vale, Hampstead. 170

A COMPETENT AND EXPERIENCED QUANTITY SURVEYOR, having spare time, would be pleased to render occasional assistance on Quantity Work which could be done without interfering with present permanent engagement.—DOUGLAS WADSDALE, c/o R. Kerr, 5, Amity Terrace, West Wimbledon. 174

ARCHITECT'S ASSISTANT (23) desires Engagement, London or South of England. Five years' experience. Neat draughtsman, designs from sketches, details, perspective, &c. Salary 30s.—ALCWN A. JONES, Sunnyside, Dudley. 175

ARCHITECT & SURVEYOR'S Junior ASSISTANT seeks re-engagement. Experience in planning, details, designs from sketches, perspectives, quantities, levelling and surveying, neat draughtsman; Prob. R.I.B.A.; mod. salary.—Address, W. HELM, Victoria Road, Woolston, Hants. 214

ARCHITECT'S ASSISTANT with small country practice, requires work in London Office for three days a week. 6½ years good, varied country experience. Moderate salary.—E. J. G., 19, High Street, Chesham. 207

ARCHITECT'S JUNIOR ASSISTANT desires engagement, seaside, South Coast; four years' experience working drawings, neat draughtsman, levelling, specification, office routine, &c.; moderate salary.—B. J., 17, Marine Parade, Lowestoft. 172

ARCHITECT'S JUNIOR ASSISTANT desires engagement in good London office; 2½ years' matric. student, King's College, Strand. Neat draughtsman, working drawings, details, tracings, &c.—Box 195, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

ASSISTANT, 15 years' experience in London and Provinces, desires Assistantship in Architect's Office at Seaport or bracing Country Town, A.R.I.B.A. Unmarried.—Particulars to PENCIL, Box 191, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

AS SURVEYOR AND ESTIMATOR. 15 years with one Contractor. 12 years in London quantity surveyor's office.—Box 209, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

BRICKLAYER FOREMAN, just completing large job in London, seeks RE-ENGAGEMENT. Experienced in large jobs; well up in drawings; with good references.—C. R., 89, Carlton Vale, Kilburn, N.W. 212

BUILDERS' MANAGER, 6 years in present situation, is desirous of taking same post, or Superintendent of Repairs on an Estate.—Apply Box 193, BUILDERS' JOURNAL Office, Great New Street, Fetter Lane, E.C.

BUILDER'S FOREMAN (General), trade bricklayer. Practical in alterations, sanitary work, &c. First-class reference. Just finished up job.—Address SIMPSON, Paragon Place, Surbiton Hill, S.W. 219

CLERK OF WORKS seeks re-engagement, whole or part time, good references and testimonials.—Apply H. E. C., 15, Maclise Road, West Kensington Park. 211

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GENERAL FOREMAN wants job, energetic, practical, and experienced, genuine references, 10 years with last employer; would manage an estate.—Box 225, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

GENERAL or WORKING FOREMAN seeks ENGAGEMENT. London and Provincial experience. Abstainer. Trade, carpenter. Age 46. Wages moderate.—H., 28, Gleggall Road, Old Kent Road. 188

GENTLEMAN (21) seeks ENGAGEMENT as ASSISTANT SURVEYOR. Good draughtsman, knowledge of Architecture. Excellent testimonials. Small salary. Surrey or Sussex preferred.—Apply, Rowson, Wavertree, Horley, Surrey. 227

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HOUSE DECORATING and REPAIRS. Surveyors' Dilapidation Work estimated for: very moderate charges.—12, Choumert Grove, Peckham.

JUNIOR ASSISTANT (Student R.I.B.A.) requires ENGAGEMENT. Neat Draughtsman, working drawings, details, surveying, levelling, and usual office routine. Excellent references. Moderate salary.—H. W. HUMPHRY, 49, Poole Road, Bournemouth West. 216

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Instructions.—Advertisers must furnish their names and full addresses, which will not be published; and a number is assigned to each for identification. All communications will be treated in the strictest confidence. Abbreviations employed:—s., salary required; ex., experience; refs., references; yrs., years.

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- 184.—YOUNG MAN. 4 yrs. ex. Assistant to foreman or master bricklayer. Energetic.

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- 157.—CARPENTER, steady, good all-round man, wants job.

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- 137.—BUILDER'S CLERK seeks appt. Correspondence, tracing, and office routine.
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CLERK OF WORKS.

- 131.—CLERK OF WORKS. Experienced and reliable; excellent refs.
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- 217.—FIRST-CLASS TRACER requires evening work.

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TENDERS—cont. from p. xv.

London, E.—For alterations and additions at the "Coach and Horses" public-house, Romford Road, Manor Park, for Mr. C. R. Graham. Mr. J. M. H. Gladwell, architect, Essex House, High Street, Stratford, E. Quantities by Mr. L. E. G. Collins, 31, Great St. Helens, E.C.4:—

R. G. Walters	£3,750
T. H. Jackson & Co. .. .	3,700
Harris & Wardrop .. .	3,219
Todd & Newman .. .	3,137
W. J. Maddison .. .	3,085
Hibberd Brothers, Ltd.* ..	2,915

* Accepted.

Leyton (Essex).—For hot-water heating apparatus required at the Norlington Road Schools, Leyton, for the Leyton District Council. Mr. W. Jacques, architect, 2, Fen Court, E.C.4:—

Akin & Sons	£461	0	0
Haden & Sons	450	0	0
Defries & Co.	404	14	0
R. H. & J. Pearson .. .	387	0	0
G. & E. Bradley .. .	367	10	0
Troup, Curtis & Co. .. .	355	5	3
Tamplin & M'kovski .. .	355	0	0
Werner, Pfeiderer & Perkins ..	350	11	2
General Ironfoundry .. .	348	0	0
Crittall & Co.	343	17	6
Brightside Foundry Co. .. .	343	0	0
J. T. Halsey	331	15	6
J. & W. Jeal	318	0	0
Lancashire Heating Co.* ..	318	0	0

* Accepted.

Merthyr Tydfil (Wales).—For the erection of two shops in High Street, Merthyr Tydfil. Mr. C. M. Davies, architect:—

E. Jones, Dowlais	£1,381	0
E. L. Sullivan	1,236	16
J. Williams	1,217	6
S. Hawkins	1,107	10
M. Warlow,* Warlow Street ..	1,080	0

* Accepted.

[Rest of Merthyr Tydfil.]

Coming Events.

Wednesday, February 24.

SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part I.).—Mr. A. Wellesley Harris, M.R.C.S., on "Infectious Diseases," at 7 p.m. Inspection and Demonstration in the district of Islington, at 2 p.m. conducted by Mr. James R. Leggatt.

NORTHERN ARCHITECTURAL ASSOCIATION.—Mr. Ralph Hedley, R.B.A., on "Architectural Details in Charcoal," at 7.30 p.m.

SOCIETY OF ARTS.—Mr. Frank Tiffany on "Mahogany and other Fancy Woods available for Constructive and Decorative Purposes," at 8 p.m.

INSTITUTION OF CIVIL ENGINEERS.—Students' Visit to inspect the Reinforced Concrete Pier in course of construction at Purfleet at 2.30 p.m.

Thursday, February 25.

CARPENTERS' COMPANY.—Prof. W. Schlich, C.I.E., on "The Forestry Problem in the United Kingdom," Carpenters' Hall, London Wall, 8 p.m.

LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY.—Mr. W. H. Bidlake, M.A., A.R.I.B.A., on "The Romanesque Churches of Auvergne," at 7 p.m.

ROYAL INSTITUTION.—Prof. H. L. Callender on "Electrical Methods of Measuring Temperature," at 5 p.m.

INSTITUTION OF ELECTRICAL ENGINEERS.—Dr. R. M. Walsley on "Trans-Atlantic Engineering Schools and Engineering," at 8 p.m.

LONDON MASTER BUILDERS' ASSOCIATION.—Annual General Meeting at 4 p.m.

Friday, February 26.

BIRMINGHAM ARCHITECTURAL ASSOCIATION.—Mr. Harold Baker on "Gloucester Cathedral."

SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part I.).—Mr. A. Wellesley Harris, M.R.C.S., on "Methods of Disinfection," at 7 p.m.

(Continued on p. xxi.)

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THE BUILDERS' JOURNAL

AND ARCHITECTURAL RECORD.

March 2, 1904. Vol. 19, No. 473.

6, Great New Street, Fetter Lane, E.C.

Summary.

■ The shallow tramway tunnel under Kingsway will be 20ft. wide and 14ft. high, with 12ft. pipe subways on each side and egg-shaped sewers below. The tunnel will be from 6ft. to 14ft. below the surface. It will emerge in Southampton Row to join up with the Theobald's Road tramway, while the whole scheme contemplates its extension to the Embankment. (Page 106.)

In an interview with a representative of this Journal Mr. Henry Holloway describes the methods of workmen and contractors in the American building trade. He instances a man named Sam Parkes, now in prison, but formerly king of the building trade in New York, as showing the trickery that prevails. It is quite recognized among builders that they can evade the law in regard to many points by simply paying a fee to the building inspector. (Page 105.)

At St. Bartholomew-the-Great Mr. Aston Webb might have reconstructed the transepts in a purely orthodox transitional Norman style, or demolished what remained of the Perpendicular clearstory and rebuilt it as twelfth-century work; but, instead, he carried on the design of the mediæval builders with just such minute personal characteristics as will prevent any archæological student being deceived as to the date of it. Bentley's restorations at St. Botolph's, Aldgate, and St. Botolph's, Bishopsgate, were on similar lines. In each case the harmony and traditional character of the church was preserved, but fresh artistic interest was added of unmistakable date. (Page 100.)

Gas engines are used at the new storm-water pumping station at Lot's Road, Chelsea. (Page 108.)

The actual expense incurred by Lord Elgin in securing the Parthenon marbles was £74,000. (Page xv.)

■ At the Kelling sanatorium, Norfolk, for consumptive patients of the middle and necessitous classes, the wards are divided up into double-bedded night shelters or cubicles, with dwarf divisions 6ft. high, each cubicle being 12ft. by 11ft. with a 5ft. opening on each side filled in with folding half-hatch doors having the upper parts glazed. The cost has been £59 per bed. (Page 103.)

The sale of "Specification No. 7"—now reduced to half its former price—continues to exceed all expectations, and we request subscribers not to be impatient if there is a slight delay in supplying copies, as our binding department finds it difficult to cope with the demand. Orders to reserve copies are being received by post, telegram and telephone. The present edition is limited, and intending purchasers are therefore recommended to make application without delay, otherwise they may be disappointed.

The Institute Designs.

In publishing this week the Tite design for a crescent in a large city by Mr. A. D. Nicholson, awarded a medal of merit, we would draw attention to the fact that the chief prize designs of the Institute—the Soane, the Tite and the Grissell—have been reproduced by us alone this year. We were enabled to do so by reason of very early arrangements.

The Skyscraper in London.

It was particularly noteworthy that the Royal Institute of British Architects, in their proposals for the amendment of the London Building Act (printed in full in our issue for February 17th), should have included an appendix relating to skeleton buildings. For the new Ritz Hotel in Piccadilly, which is to be built on the site of the Walsingham House Hotel, we know that proposals for a steel framed structure were rejected, but the use of stanchions and girders has become so general and their employment is increasing so extensively—as one may see in the Savoy additions or the new Gaiety building—that it is not improbable the American system of construction will be legalized in the amended Building Act. At first one might suppose this to mean the advent of the skyscraper in London, the sky of which, we are told, is much in need of scraping; but on second thoughts we find greater comfort in remembering that even Americans have discovered there is a limit to their aspirations, which limit is considerably below twenty storeys. Ground in London is as precious as gold, and we doubt not that with steel skeleton construction the trend would be towards very high buildings, yet light and air are more precious than gold, and it is not likely that the London County Council would permit streets to be made into chasms. When it comes to New York buildings like the Manhattan (22 storeys, 348ft.), the St. Paul (26 storeys, 308ft.) and the Park Row (29 storeys, 382ft.), we feel it is perhaps better to emulate those beetles of Madeira which lost the power of their wings but were able to crawl safely over the earth, than to be like their flying brethren which were caught by the gale, blown out to sea, and drowned. As a contemporary observes, in New York although several mammoth structures are at present in course of erection there are signs of a reaction. More than once lately an important bank has preferred to put up for itself a modest house of three storeys, instead of building a skyscraper of twenty storeys and letting seventeen. Not all recent enterprises have fulfilled the expectations of speculators. And there is finally that great

fear of fire, which the recent catastrophe at Baltimore has only served to increase. It is worthy of note, however, that the newspaper accounts of this matter were grossly misleading. Their statements led one to infer that the fire had occurred among an area of steel-skeleton buildings, which collapsed entirely: yet we learn from "The American Architect" for February 13th, which has just reached us, that there were only three or four buildings of modern fire-resisting construction. How they stood the test we do not know, but the brick houses, with wooden floors, roofs, framings and trimmings, characteristic of the older portion of Baltimore, vanished like tinder.

Bribery and Corruption.

In the same issue of "The American Architect" there is a remark which may be read in corroboration of Mr. Holloway's statements about bribery and corruption among American contractors and building inspectors. We need not repeat here what Mr. Holloway said in the interview with our representative reported on p. 105 of this issue, but we may aptly quote our contemporary, which observes that "the reason why people are slaughtered wholesale in American buildings is not that there are not enough good laws, but that the laws are shamelessly and deliberately violated every day in the year, with the knowledge, and frequently with the connivance, more or less corrupt, of those whose sworn duty it is to enforce them." We are far from perfect in England, but so far as this matter is concerned, if integrity counts for anything, we are much nearer Heaven than the Americans.

"Bottle" Houses.

"THE MANCHESTER GUARDIAN," which is about the only newspaper in the Kingdom that deals with architecture intelligently, gives us a brilliant piece of information about the town of Tonopah, Nevada. It appears that building materials are so scarce there that all manner of things are made use of; but nothing excels the creation of one gentleman who has just finished a semi-detached villa of old bottles, built in with mud, ends up, several rows together, to form the walls. The effect of this jewel house at night time, with the thousand reflected lights flashing through the glass, is said to be a sight never forgotten—which we can readily believe: so successful indeed has been the experiment that builders in the town are offering to erect other "bottle" houses. Nevada is a barren land, where Nature offers only a few conifers: but Man provides bottles—empty bottles.

NOTES ON THE CITY CHURCHES.—IV.

(Continued from p. 64, No. 470.)

By F. HERBERT MANSFORD.

Restorations.

INSEPARABLY connected with the subject of interiors is that of restoration. It has rarely been very difficult to find funds when a City incumbent has thought it desirable to mediævalize or modernize his church, and the history of the edifices in the past century is one of frequently recurring repairs and alterations. Money has sometimes been spent with more freedom than discretion, and such churches as St. Swithin's, St. Mary Aldermanbury, and in a less degree St. Stephen's, Coleman Street, have lost much of the character impressed upon them by Wren without acquiring any fresh stamp of distinction. In other cases the restorer's work has itself been swept away or left to decay—Sir Gilbert Scott's south porch at All Hallows, Barking, being an instance of the latter treatment. The customs of filling in Renaissance windows with modern plate and wheel tracery, and decorating the plastered walls with conventional masons' joints, have long subsided, but that of ruthlessly removing the old pews with which the churches were all richly furnished can hardly be said to be equally out of date. Only recently the pews of St. Giles, Cripplegate, after having been tolerated in a cut-down condition for several years, have been finally removed in favour of particularly ugly chairs.

Of Scott's and Butterfield's restorations a good deal has been said elsewhere, but it will not be out of place to refer briefly to the work of later men—men whose methods have generally been different to those of the great revivalists. We naturally think first of St. Bartholomew-the-Great, for not only is this our most treasured heritage among City churches, but public interest was widespread, the problem difficult and the work extensive. Mr. Aston Webb might have reconstructed the transepts in a purely orthodox transitional Norman style; some of his precursors would probably have demolished what remained of the Perpendicular clearstory and rebuilt it as twelfth-century work. He did neither of these things, but carried on the design of the mediæval builders with just such minute personal characteristics as will prevent any archaeological student being deceived as to the date of it; and not only was none of the time-stained surface scraped from the old wall, but stone of a different tint was used for the new work.

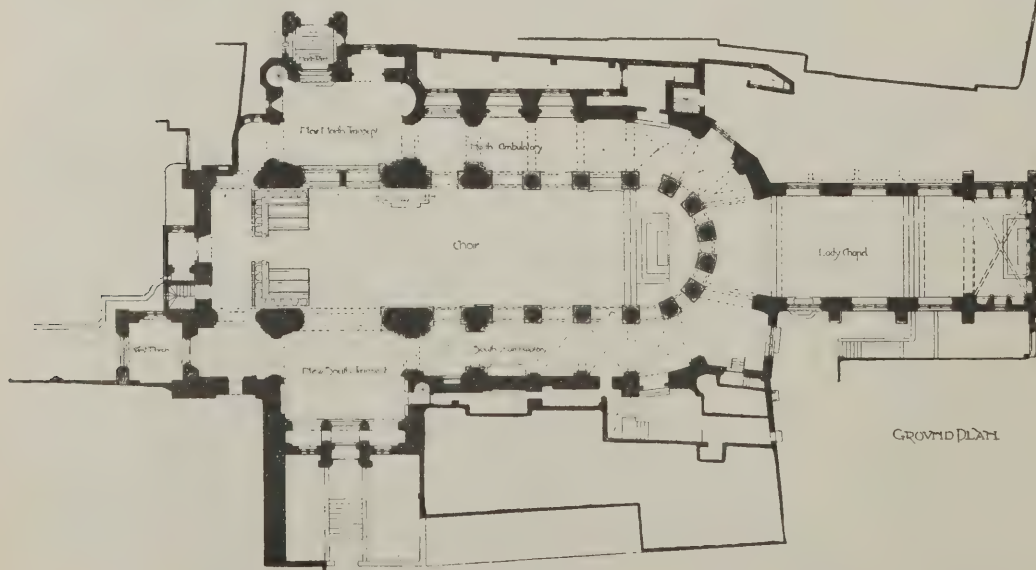


ST. BARTHOLOMEW THE GREAT, SMITHFIELD: NORTH TRANSEPT, BY ASTON WEBB, R.A.

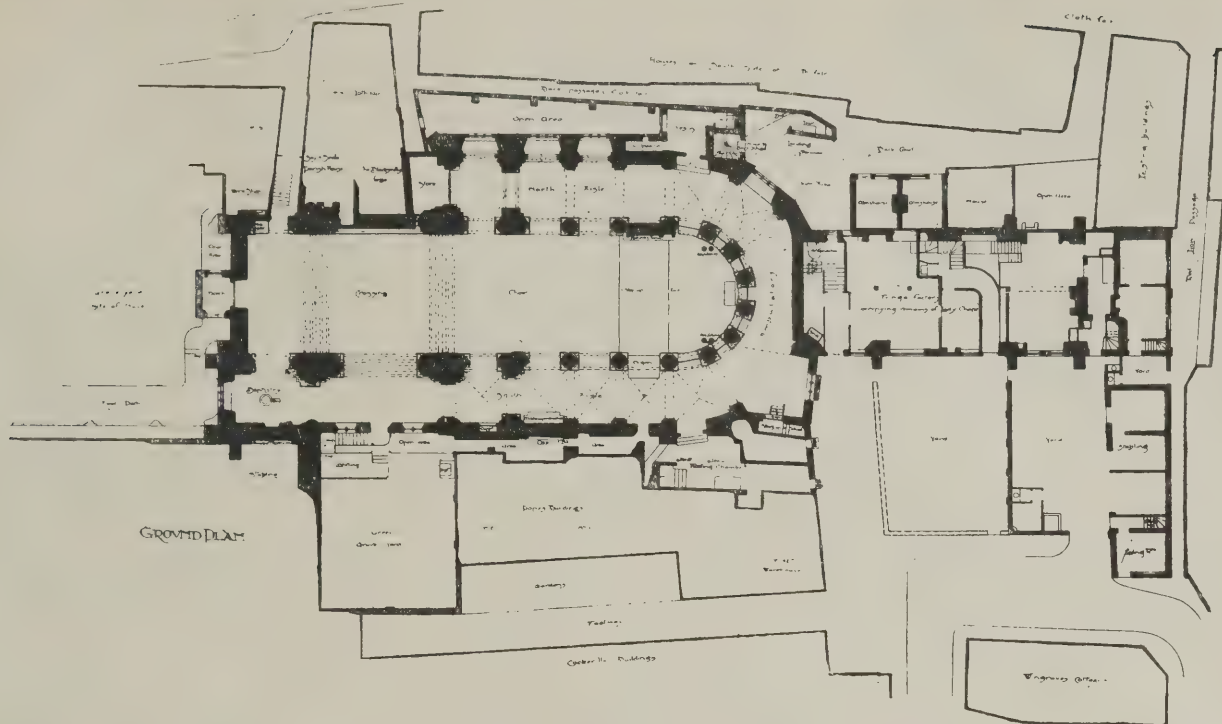
The restorations of Mr. Bentley at St. Botolph's, Aldgate, and St. Botolph's, Bishopsgate, were on similar lines. In each case the harmony and traditional character of the church was preserved, but fresh artistic interest was added of unmistakable date. The unity of effect and true proportions of City churches have been sometimes marred by the removal of galleries. But at Aldgate

Bentley, so far from removing them, went to the length of reconstructing the gallery fronts as early Georgian balustrades (the church was erected in 1744) and enriching the plaster ceiling below with panelling and floral ornament. To him are also due the fine choir stalls with open screenwork behind, the leading of the window glazing and the boldly conceived modelling on the cove of the ceiling, amorini supporting the arms of various City companies.

At Bishopsgate, Bentley was perhaps even more successful. The gallery of the north aisle had been shortened by one bay to allow of the erection of the organ close to the chancel. He removed this to its original position over the lobbies at the west end, but divided so as to display the stained window, and having replaced the aisle gallery restored the original symmetry of the church. The new woodwork of stalls and seating is solid, refined, harmonious and yet of unmistakably late nineteenth-century date. The side walls of the chancel have been enriched with opus sectile panels above a green marble dado, the beautiful vertically placed veinings of which are undisturbed by mouldings. The walls and ceiling were re-painted and at places relieved with gilding and other devices. The church, being largely lit from a lantern in the roof of the nave, can afford the sacrifice of light involved



ST. BARTHOLOMEW'S, AFTER RESTORATION BY ASTON WEBB.



ST. BARTHOLOMEW'S (1855), BEFORE RESTORATION BY ASTON WEBB.

by a complete series of fully-coloured windows, and these are seen in unshadowed perfection owing to the extent of the churchyard without. On a fine day this church and its environment bespeak a dignified, cheerful and not too emotional religion. Prebendary Roger's broad Anglicanism found a true interpreter in the Roman Catholic architect.

Let us cross the roadway to St. Helen's. Only the comparatively modern doorway of Inigo Jones separates us from the Middle Ages, and as we descend the steps into the church we conjure up the figures of gentle nuns, vested priests and prosperous citizens. Yet the restorer has recently been at work—one of another school, but perhaps as well suited to his special problem as Webb and Bentley were to theirs. As at St. Botolph's, we see the names of numerous rectors and churchwardens and (as also at the last-named church) even the postal address of a firm of stained-glass artists upon one of the windows, but no indication of the name of the man to whom the present aspect of the church is mainly due. We recognize Mr. Pearson's art in the screens, stallwork, triptych and other elaborate fittings of the chancel. Mr. Pearson lowered the pavements to their original levels and thus displayed the arcade in its original dignity and proportion. All the new work is in a correct, if slightly unimaginative, taste; it is all as it might once have been. The result is a mediævalism only excelled in London by the Abbey itself. Especially fine is the view from the Lady Chapel across the chapel of the Holy Ghost with its recumbent effigies, and across the sanctuary, the darkness of the nuns' choir closing the vista behind the canopied tomb of Sir William Pickering.* Ancient brasses are beneath us, mediæval tombs and even an ancient altar are close by, and everywhere stained glass and carvings in wood, stone or alabaster attest the beneficence or memorialize the names of such worthies as Sir Thomas Gresham.† Sir John

Crosby,* Sir John Spencer,† Sir Andrew Judd,‡ Sir Julius Caesar§ and Sir John Lawrence.||

Since the demolition of St. Martin Outwich and the removal of its chief monuments to St. Helen's the latter has become quite a treasury of City memories, and the writer hopes at some time to see screens erected between the piers of the arcade (as formerly), and the northern portion of the church cleared of its unused chairs and formed into a storehouse for relics of City churches which now find their way elsewhere.¶

St. Helen's is closely surrounded by houses on the east and north, but if the visitor obtains a view of the east end he will find it a most picturesque piece of walling, mainly of chalk and flints, while on the north he will see indications in the masonry suggestive of a former lean-to roof, probably of the cloister, pitching against the wall of the church, and thus accounting for the unusual height of the window-sills on this side.

At All Hallows, Barking, Mr. Pearson's restoration was more structural. The walls externally were largely refaced with a stone

"and wylt not fayle but to send the wainscot and the glass by the first ship," and "I have received the pictures you wryte of whereof I wyl cause the Queene's Majestie's (statue) to be made." Gresham also carried out works at his country seats of Osterley Park, Middlesex, and Mayfield, Sussex, and probably at Intwood, near Norwich.

* A celebrated alderman and sheriff. Shakespeare makes him Lord Mayor in his play of "Edward IV.," but without authority. Crosby was a member of Parliament and an ambassador for the king, but he is best known perhaps as founder of Crosby Place, Bishopsgate, afterwards the residence of Richard III. when Duke of Gloucester.

† Lord Mayor in 1595. Spencer was one of the most wealthy men of his time. His only child, Elizabeth, was carried off in a baker's basket to become the wife of Lord Compton, and Spencer's wealth helped to create Ashby Place and other residences of the Northampton family.

‡ Lord Mayor in 1550. Founder of Tonbridge School.

§ Master of the Rolls and faithful friend to Lord Bacon.

|| Lord Mayor during the Plague. It was in his honour that the carved wooden sword and mace rest were erected. On the destruction of the pews this was removed to the chancel.

¶ In the Kensington Museum is an elaborately carved organ blower from St. Mary Somerset. At St. Dunstan's Lodge, Regent's Park, is the clock with striking figures which formed one of the attractions of Fleet Street when old St. Dunstan's blocked the road. In the Guildhall Library is a fifteenth-century missal formerly in use at St. Botolph's, Aldersgate; it is beautifully illuminated and enriched with paintings of the Crucifixion and other subjects. Such relics are to be met with in unexpected places, as for instance, in the officers' residence of the smallpox hospital at South Mimms, Herts, where are two door-cases and other woodwork from the Dutch Church, Austin Friars.

of a beautiful greenish tint and the north porch added, while open-timber roofs took the place of the old plaster ceilings internally.

There is yet another type of restoration, and that, perhaps, in most cases the best. It is economical and unsensational, consisting mainly of repairs. The harmony and dignity of such interiors as those of St. Andrew Wardrobe and St. Mildred, Bread Street, are examples.

At St. Andrew's the main features are the tall dark unvarnished pews which fill the nave from end to end and line the aisles with oak, the well-continued galleries resting upon wainscotted piers, the barrel vault with its exquisitely modelled plaster foliage, and the wrought-iron grilles on either side of the chancel. Such grilles, although recalling work in the cathedral, occur in no other City church, and were only inserted in 1889, when the galleries were removed from the eastern bay. This change was the only important one made by Messrs. Bodley & Garner at the restoration, and the church was only closed for five months.

St. Mildred, Bread Street, is almost as Wren left it, the blocking of the north window excepted. At the recent restoration, under the direction of Mr. Charles Innes, architect, the pews of the centre were closed into one block by the abolition of a transverse passage; this allowed the columns of the lobby screen to be seen in their entirety, as was probably originally intended. All the woodwork, and there is a great deal of it, appears to be in excellent condition. The church on plan is an oblong apartment without column or pilaster; but the beauty of the barrel vaults and intervening cupola is remarkable. The restoration took place during the present incumbency; and that the Wrenian spirit has been so preserved in the smallest particular is the more striking inasmuch as the rector's own tastes are avowedly Gothic.

Sometimes restoration has been mainly a matter of re-decoration, which in the case of plastered interiors is a necessity at least once in a generation. Reference has already been made to the painting of St. Bride's, St. Nicholas Cole-Abbey, St. Mary Abchurch and St. Botolph, Bishopsgate. The simple interior of All Hallows-on-the-Wall was rendered beautiful by a quiet but comprehensive scheme of decoration twelve years

* Pickering was a learned ambassador and warrior and a reputed lover of Queen Elizabeth.

† Gresham may be considered to have somewhat modified our national architecture. The gr at house he built for himself in Bishopsgate (afterwards Gresham College) and the Exchange were among the very first buildings in England to have complete internal arcaded courts or piazzas. The Exchange must have been very foreign in character, for not only was the architect Flemish but most of the sculptures and finishings were executed abroad. Gresham's agent in Antwerp writes:

ago. St. Albans, Wood Street, has perhaps gained more than any other City church in this respect. The meagreness of its walls and plaster vaults is less apparent beneath the rich beauty of the stencilling applied about three years since. To anyone familiar with the former aspect of the church the change is surprising indeed, and one would like to see such churches as St. Ethelburga and St. Dunstan's-in-the-East similarly treated, if only funds were available.

St. Mary Woolnoth having disposed of its crypt to a railway company, celebrated the event internally in cream and gold, about as safe a scheme of colour as could have been chosen. Butterfield's previous decoration, although not quite classical in feeling, had warmth and some merit of daring.

Under the "City of London Parochial Charities Act" the funds of the churches have passed into the hands of Commissioners, who make from them an annual grant for maintenance and repairs and hand over the balance to the trustees of various institutions. It is therefore extremely unlikely that extensive schemes of restoration will be as frequent as during the past fifty years. A policy of annual repair is conservative and economical, and experience has proved that the energy of incumbents and churchwardens may generally be relied upon to encourage the adornment of the edifices under their charge. But the small congregations of to-day are not often able to meet large and unusual disbursements, and there is a danger that some churches will gradually assume the dinginess which is sooner or later an accompaniment of our London atmosphere, and will consequently be regarded as less worthy of preservation.

(The next article will appear on March 30th.)

GREEK SCULPTURE.

AT the last general meeting of the York Architectural Society Mr. Wilfrid J. Milburn, sculptor, read a paper on "The Friezes of the Parthenon." He said that the first period of Greek sculpture, extending through the heroic ages, or about eight almost unknown centuries, was called the archaic period. Dædalus was the first sculptor of note, who besides being an artist was a skilful mechanic, and to him is attributed the invention of the axe and wedge, and also the art of flying. His figures were chiefly rough-hewn blocks of wood—trunks of trees even—and were painted to hide their incongruous grotesqueness. At Athens in later years there existed guilds or families of sculptors called "Dædalids."

Passing from this early artist in relief we came to the sculptors of the fourth and fifth centuries B.C., who, it was universally admitted, had never been excelled. As far back as the sixth century B.C. they were famous for their figures of the youthful male form and athletes. The reason for this was found in the fact that the sculptors had only to go to the palaestra or gymnasias, where the games and athletic festivals were in progress, to see the finest specimens of manhood.

In 480 B.C. Athens was captured and sacked by the Persians; but the enemy was eventually driven out, and the Athenians then resolved to build in their beloved city great and glorious monuments to the gods. In 476 B.C. Cimon discovered the bones of Theseus, in whose honour it was decided a temple should be built. Though not a large building, yet the Theseum was of remarkable beauty and exquisite proportion;

it was supposed to have been the model for the Parthenon. Young Phidias was entrusted with the work, and a change, noticeable for its dignity of conception and purity of outline, was soon apparent. Phidias was born about 488 B.C. He was intimately acquainted with the poems of Homer, and from them he is said to have drawn the spirit of greatness which he fashioned in earthly materials. He excelled in representing the gods. Quintilian said that "Phidias added something to received religion."

Dion Chrysostom, when gazing at the colossal seated figure of Zeus at Olympia, 45ft. high, made of ivory and gold, said: "Were anyone so heavily burdened with cares and afflictions and sorrows that even sweet sleep would not refresh him, standing before that statue he would, I firmly believe, forget all that was fearful and crushing in life, so wonderfully hast thou, O Phidias! conceived and completed thy work. Such heavenly light and grace is in thy art."

Strabo, however, was a little more critical. He said: "The greatest of these offerings was the statue of Zeus made by Phidias, son of Charmides the Athenian; this is of such colossal size that although the temple is a very large one the artist seems to have failed to observe proportion and has represented the god seated, but almost touching the roof with his head; thus creating the impression that should he rise and stand upright he would unroof the temple."

All the treatises written by the Greek architects on their work had been either lost or destroyed. Pausanias himself was very meagre in his description of the Parthenon, as he informed us that Ictinus himself had written a treatise on the construction of this great temple.



ST. MARTIN, OUTWICH, GREAT ST. HELEN'S, E.C. (REBUILT IN 1796-7), NOW DEMOLISHED.



KELLING SANATORIUM,
NORFOLK.
CLARE AND ROSS,
ARCHITECTS.

The word Parthenon meant the Virgin's chamber (*παρθενος* = a virgin). This temple, dedicated B.C. 438, was built by the architects Callicrates and Ictinus, under the able leadership of Pericles, then in command at Athens. To Phidias he entrusted the supervision and decoration. The Parthenon was built of pure white Pentelic marble, and its dimensions in English feet were: Length 227ft., width 101ft., height 65ft., the architecture being of purest Doric. The metopes were originally ninety-two in number, and it was supposed they set forth the three great legendary wars: the Gods against the Giants, the Lapiths against the Centaurs, and the Greeks against the Amazons. In 1799 Lord Elgin (ambassador to Turkey) suggested to His Majesty's Government some scheme to foster the classic art of Athens for the benefit of students. Two years later, after bearing all expenses, he received permission not only to fix scaffolding but to take away any old stones with inscriptions or figures on them, and thus collected the masterpieces of Greek art known as the Elgin marbles. In 1811 Mr. Percivall offered £30,000 for them, but Lord Elgin declined. Public opinion was very divided as to the method by which they had been obtained. Lord Byron was very bitter. On the other hand, in defence of Lord Elgin, it was argued that he rescued the marbles from the depredations of the Turks, who in a few years did more damage than all time.

Two valuations were taken when negotiations were opened as to the merits of these sculptures—that of Mr. Richard Payne amounting to £25,000 and that of William Richard Hamilton to £60,800. The actual expense incurred by Lord Elgin was £74,000. The price proposed and agreed upon was £35,000.

The Panathenaic Frieze was composed of slabs of marble 3ft. 4in. high and occupied, slab after slab, a length of 524ft.: of these we had in sculpture 249ft. and in casts 76ft. The relief was flat, otherwise the work would not have been seen, on account of the projecting shadows, as the light was reflected from the pavement below. The subject represented the sacred procession in honour of Minerva, the guardian goddess of the city: the occasion being the taking of the veil to the temple.

The procession began in the Outer Ceramicus, and having passed through various precincts, divided into two columns and proceeded eastward along either side of the temple, meeting at the angles of the eastern front.

The correctness of national dress was not strictly adhered to, the artists being allowed to give full play to their taste and skill, though Phidias was responsible for the general design. The pleasing variety which pervaded the costume throughout was particularly agreeable. Twelve seated figures occurred in the frieze, and these were supposed to have been the gods and goddesses.

It was difficult to determine who the characters were, as time had effaced all the colours and attributes, such as bronze, sceptres, crowns, &c., which would have decided the point.

Such then was the genius of Phidias, whom fortune and the jealousy of the opposing factions in Athens allowed to die in prison; but that Athens alone was not the only great school of sculpture was shown by the following lines from Pindar:—

"Thence in all arts the sons of Rhodes excel,
Though best their forming hands the chisel guide.
This in each street the breathing marbles tell
The stranger's wonder and the city's pride."

In the first of his recent lectures at the Royal Institution Professor Waldstein said that students who had studied the treasures at the British Museum and other collections would recognize seven different periods and schools in Greek sculpture. Broadly, they were differentiated as archaic in style, of the middle period, or of the later period, the dates ranging from the fifth century before Christ to the fourth and third centuries. A full-length figure of the Apollo of Orkemenos was first thrown on the screen, in which the primitive drapery and the wooden characteristics of the most archaic style were clearly evident. With this was contrasted the attention to anatomical details which characterize the sculptures of a transitional period, and the sensational treatment of drapery and the anatomy characteristic of the fourth century and later periods. The treatment of the eye was a marked criterion, all sculptures in which the eyelids were evenly closed being certainly earlier than about 460 B.C. An apparent negative to this proposition was

shown in which the projecting upper eyelid that always marked sculptures subsequent to B.C. 460 was evident. It was afterwards discovered to be a restoration by Thorwaldsen of an archaic head in which the famous sculptor seems to have forgotten the archaic characteristic of his original. After Lysippus the treatment of the brow and the eye invariably differed from the archaic treatment of the early sculptors.

KELLING SANATORIUM, NORFOLK.

THIS sanatorium, now nearing completion, is intended for the treatment of consumption amongst the middle and necessitous classes. It is supported by voluntary contributions, the patients also contributing towards the working expenses according to their means.

A beginning was made by altering and adapting an old house to accommodate twelve beds (the plan on the next page shows the old house by hatching and the new work by solid black walls). The treatment being so successful and the demands rapidly increasing, it was decided to erect two new pavilions for eleven beds each.

The site is a very favourable one, being several hundred feet above the sea and about five miles away. Moreover, it is sheltered from the cold winds by a horse-shoe shaped belt of firs on the north and west sides. The two new pavilions run in a westerly direction at right angles to the administrative buildings.

After some experiments by the Committee with temporary wooden buildings, the arrangements of the wards, &c., were decided upon as being best suited for the rapid cure of the dread disease. The wards are divided up into what might be called double-bedded night shelters or cubicles, with dwarf divisions about 6ft. high. Each cubicle is for two beds—12ft. by 11ft., with a 5ft. opening on each side filled in with folding half-hatch doors having the upper parts glazed; so that the amount of incoming air can be regulated to any extent. The floor space is strictly limited to what is required for beds and necessary furniture, and the buildings are merely sufficient to provide the requisite

privacy and protection from high winds and driving rains, thus approaching as near as possible to sleeping in the open air.

Each pavilion accommodates three separation wards about 11 ft. by 9 ft. For economy the ceilings are only made 7 ft. 3 in. high, a greater height being unnecessary as the buildings are flooded with air. Each pavilion is also provided with a lavatory for six basins, urinal, two bathrooms, nurses' bed-sitting-room, and kitchen furnished with sink and small stove for heating milk. Each patient has a double cupboard at the foot of his bed, and in the lavatory a locker for storing the rug used in the day shelter; also space for boots. Around each pavilion is a concrete path 3 ft. wide, the eaves being brought over to cover it, so that the nurse may be able to walk round under shelter and visit the patients. All doors and windows open outwards and fasten back against the wall to give a clear opening, in addition to which provision is made for a constant and free access of air to all parts of the building. Air passes constantly through the roof so as to keep the rooms cool in warm weather.

In the grounds a building is being provided with cubicles for four beds and sitting-room for convalescent patients, to form a transition stage between the sanatorium and their own homes.

Careful attention has been paid to economy in construction and convenience in arrangements, in order to reduce the initial and working expenses to a minimum. The walls are constructed of purpose-made "Mack" fireproof slabs finished on the outside with cement rough-cast, the walls being only about 4 in. thick when finished. The roofs are covered with Major's double Roman tiles. The ceilings are constructed of fibrous plaster slabs, and the whole of the inside is finished with special quick-setting plaster, all corners being rounded. The floors are floated with quick-setting plastic material,

and where not covered with linoleum the floor plaster has a mixture of ground cork. The walls, ceilings and floors have thus a continuous and jointless surface. The inside surface of the walls and ceiling is covered with Hall's sanitary distemper, and all wood-work has two coats of Solignum.

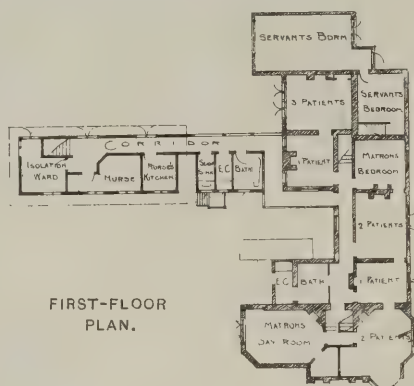
With regard to the cost, two estimates were obtained, one with timber walls lined with match-boarding and a tile roof, and the other for the construction just described; it was found that the latter, which is durable

these cesspits are used alternately, to allow time for soakage. The buildings are lighted throughout with acetylene gas. In the grounds day-shelters are provided on the south side, and also a tennis lawn, vegetable and fruit gardens, where some of the patients are kept employed when convalescent. The buildings have been expeditiously carried out by Mr. T. H. Blyth, builder, of Foulsham, East Dereham, Norfolk, the architects being Messrs. Clare & Ross, of 1, West Street, Finsbury Circus, London, E.C., Westcliff-on-Sea and Chelmsford.

In an article on "Sanatorium Sleeping Accommodation for Poor Patients" which appeared in "Tuberculosis" last July, Dr. W. J. Fanning, resident medical officer at Kelling Sanatorium, describes an experimental night shelter which was erected, and proved successful, before the new buildings at Kelling were decided upon. This shelter was of the chalet type, the walls having large openings so arranged that when the patient was in bed he had an open window close to his head and another at his feet, thus keeping him as much as possible in the open air. Dr. Fanning deprecates the erection of large and costly buildings for consumptive patients.

Royal Academy Exhibition, 1904.

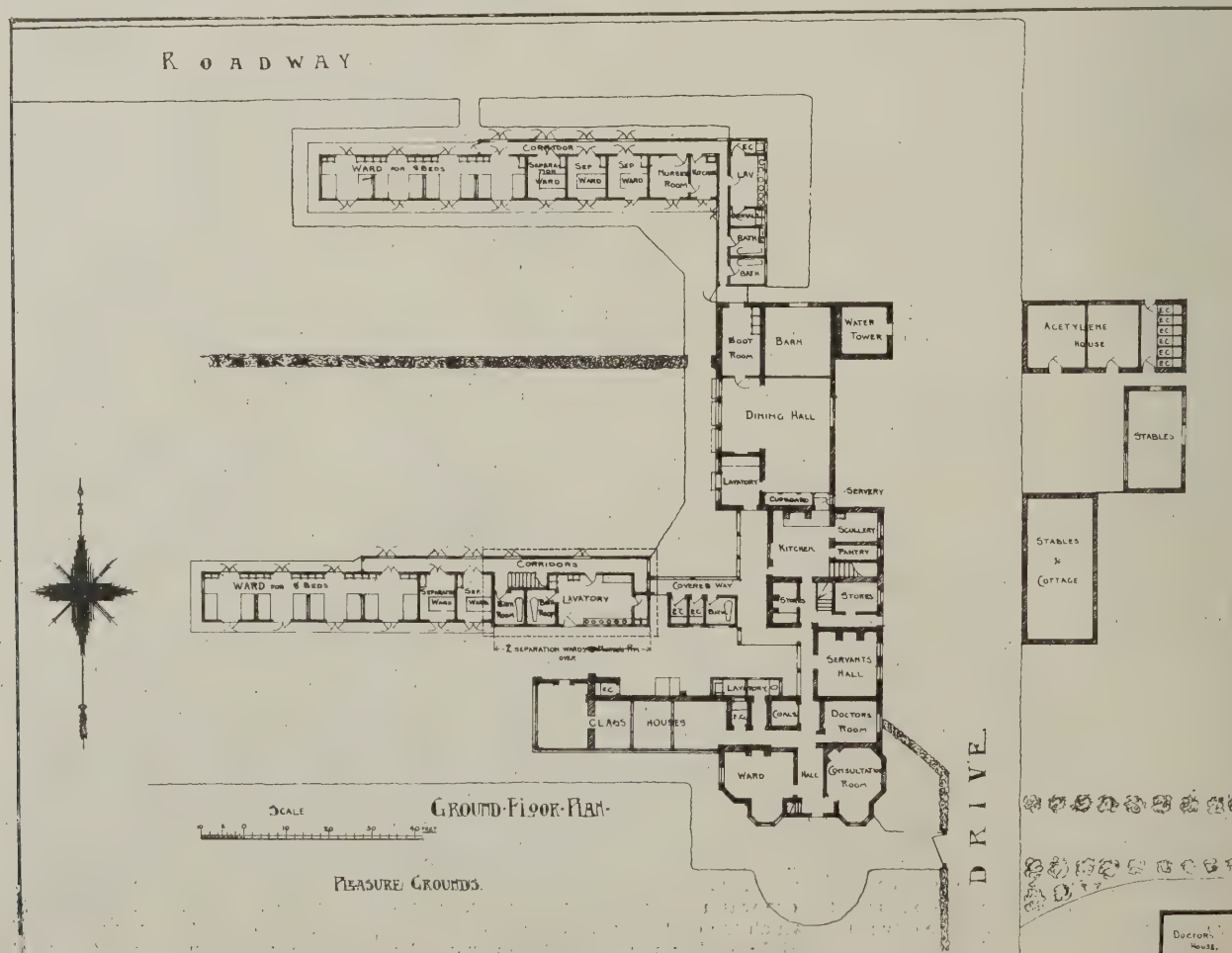
THE sending-in day for architectural works at this year's Royal Academy Exhibition is Friday, March 25th. As in previous years, we shall be pleased to deliver any works free of charge, provided they are sent to our offices, 6, Great New Street, Fetter Lane, not later than 2 p.m. on the above date, and to make reproductions of such as we wish. We would once more urge upon architects the desirability of sending their frames as early as possible.



and practically fireproof, worked out at the same amount as the timber construction.

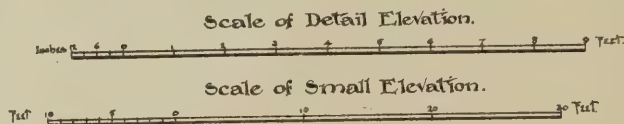
The cost of the two pavilions, including drainage and hot- and cold-water supply, was £1,300, or £59 per bed. The resident doctor's house cost £630.

There is an excellent supply of water from a deep well, and a gas-engine is used to pump it to a cistern in the water tower. Earth apparatus is used in the closets, which are isolated from the buildings. The waste drainage is conveyed to two large cesspits in the adjacent wood, which are sunk into a sub-strata of sand; by means of valves

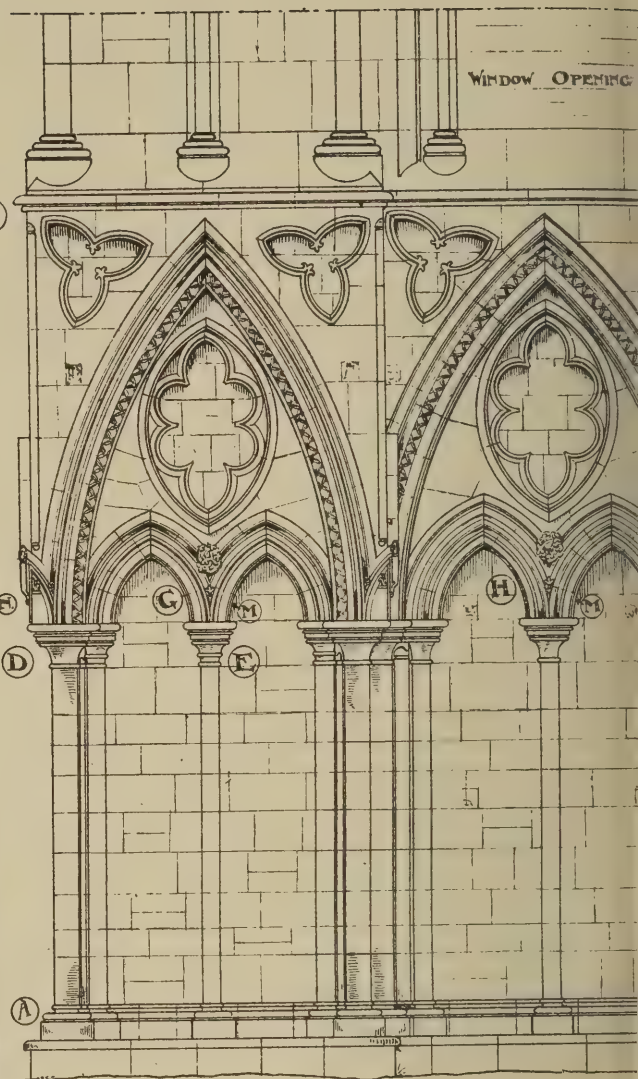
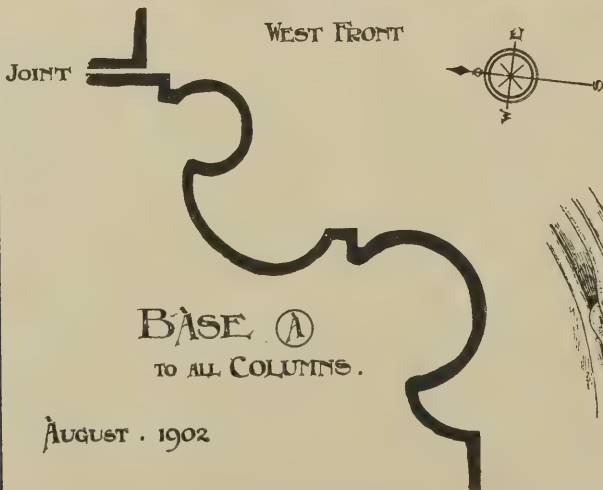
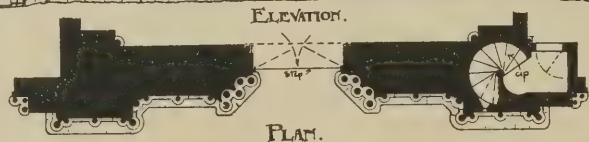
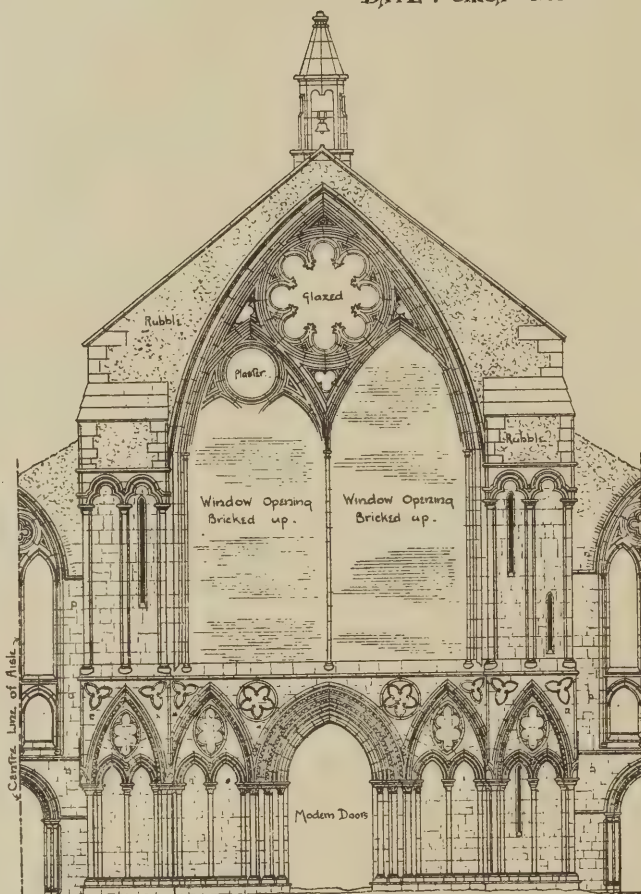


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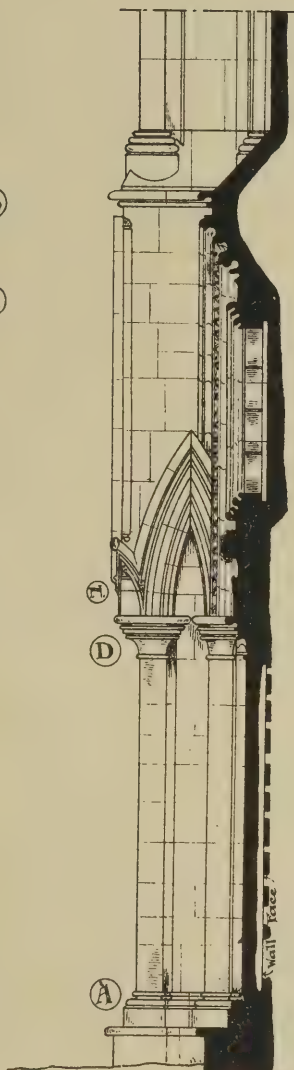
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THE BUILDING TRADE IN AMERICA.

Interview with Mr. Henry Holloway.

MR. HENRY HOLLOWAY of Messrs. Holloway Brothers, Ltd., is not only the head of one of our leading building firms but he is also a keen observer of men and things, and he has lately returned from a visit to America with a vast store of information and impressions about the American building trade. It was with a view to eliciting for the benefit of our readers some of Mr. Holloway's impressions of American ways that a representative of *THE BUILDERS' JOURNAL* called on him the other day at his office in Lambeth. A short time previously, in a discussion at a meeting of the Society of Arts, Mr. Holloway had spoken on some of the more technical aspects of the subject, and his remarks on that occasion were reported in our issue for December 9th, 1903. The present interview, therefore, was devoted rather to a discussion of what might be called the politics of the building trade—the relations of employers with employed, of employers with each other, and of the trade generally with the city and the State.

"The thing which most strikes an Englishman," said Mr. Holloway, "in observing American methods is the extent to which the dollar influences everything. There is not the good-fellowship either amongst men or masters that we find here. It is a case of every man for himself. If men can get an extra dollar they don't stop to think whether their action will deprive others of employment. Wages in the building trades are high, amounting for mechanics in New York to 2s. 3d. per hour; they are pushed up to this level, or even higher, by the competition between employers for the best men. Men are induced to go from one firm to another by promises of increased wages.

"With the contractors also," continued Mr. Holloway, "it is just the same; so that we find in America combinations between workmen and contractors such as we know nothing of in England. It is no uncommon thing, if a contractor has difficulty in finding men to carry out a job he has on hand, for him to induce the trade-union delegate to call out the men on other contractors' jobs in the vicinity so that he may have a plentiful supply of workmen."

"But are the men," asked our representative, "willing to submit to this sort of thing?"

"They don't mind," said Mr. Holloway, "because their wages are paid by the contractor who is in want of labour. The trade-union delegate has power to call men out without giving any reason; he is master of the situation, and plays off one contractor against another. Of course he gets rich in the process, but the workmen don't seem to mind so long as they are not themselves injured. An influential trade-union leader told me that it was an admitted thing that the trade-union delegates were making large sums of money. But in doing so they had not robbed the workmen. On the contrary, they had raised wages in some cases by 50 per cent. and had reduced the working day from ten to eight hours; and if they could do this by setting the contractors against each other it was recognized as quite natural that they should make money thereby. A short time ago a man named Sam Parkes, who is now in prison, was practically king of the building trade in New York. About five years ago he was a house-smith employed by a large firm of contractors, who afterwards made him a foreman. He organized the house-smiths' union, and afterwards formed a central board of delegates from all the unions, of which he became the moving spirit. Previous to his arrest he was living up to thousands a year, which of course he did not obtain from the trade unions."

Mr. Holloway went on to give a startling example of the way in which this man manipulated the contractors and workmen. A large job was being tendered for, and amongst those who made bids was a firm that was associated with Parkes. This firm's tender was not the lowest, but as they were most anxious to secure it they arranged with Parkes to call out on strike the men on three or four jobs in the vicinity belonging to the contractor who sent the lowest tender. The contractor (Parkes's friend) then went to the owner, pointed out that the man whose tender was lowest was in difficulties with his workmen and would not be able to carry out the work (which was a matter of urgency) in the required time, and eventually convinced the owner and architect such was the fact—the trick working successfully inasmuch that he secured the contract. That result being attained, the men on strike were allowed to go back to their work. Perhaps the most curious part of the story is the fact that the man who had been thus cheated seemed to regard it as a piece of ordinary business. He bore no grudge against his rival. "I guess I shall have my turn some day," he cheerfully remarked to Mr. Holloway.

Speaking of other kinds of combinations in the building trade, Mr. Holloway told of a case in which employers, trade unions and building-material merchants combined together to put up prices. "The trade unions undertake not to work for anyone not in the ring. Employers will not employ any but trade-union men, and the building-material merchants will not supply material to any but the firms in the ring. By these arrangements they put up prices, arrange large contracts and apportion them amongst themselves. The man who executes the work is allowed about 15 per cent. profit, the balance being pooled and divided. It seems almost impossible to stand against these combinations. I asked what would happen to a man who, appreciating liberty and his own independence, set his back against this sort of thing. For answer the case of a school building in Chicago was quoted to me. The plumbers' contract on this building had been undertaken with outside labour. The combination positively drove the contractor and his men out of the city, and when I was in Chicago last autumn no one could be got to finish the work until the whole of that done by the obnoxious contractor had been stripped out of the building."

In answer to a question about the relation of the law to building operations, Mr. Holloway spoke of the widespread corruption among building inspectors. "You will find," he said, "officials whose ordinary income would be £250 or £300 a year living up to a position of £800 or £1,000 a year. It is quite recognized among builders that they can evade the law with regard to many points by simply paying a fee to the inspector. I went with one of the large New York contractors to a building he was erecting just out of Wall Street. I saw that an important thoroughfare was blocked up by his material, and expressed surprise. 'Oh,' he said, 'it is nothing unusual; we pay for it.' I asked what this privilege—this permission to break the law—might cost. He thought they paid about 500 dols for it and added a refresher from time to time.

"But where," asked our representative, "does the public come in? Does no one complain of this sort of thing?"

"The public," said Mr. Holloway, "is not considered at all. This was going on while the Reform party was in power, and it may be supposed that under Tammany rule matters will be even worse. The Reformers did a great deal to improve civic government, but it was apparent when I was there they had no chance of re-election. All sorts

of people found that the reforms cut against their personal interest, and in New York personal interest seems to be supreme."

"And how does the lax administration of the law affect questions of public safety? Are the disasters of which we sometimes hear due to breaches of the law?"

"It is most difficult," said Mr. Holloway, "to get at the truth about these things, even in a court of justice. But with regard to the building Acts one finds everywhere that the law is not complied with. There is no country that has better laws—if only they were obeyed. But I don't think there is the same amount of thought given to the protection of the public and of the workers as there is in England. They have no Workmen's Compensation Act in America. But they have an Employers' Liability Act somewhat on the lines of our own Act; so that the position is much the same as we were in before the passing of the new Act. They do not, however, attach the same value to life as we do here; and we see this not only in building matters but in many other directions.

"One comes away with a strong feeling of the lack of public spirit. There is not the same generous idea of protecting each other's interests which we find here. An instance of the mutual distrust prevailing in the building trade came under my notice. An association was formed last Spring to try and get rid of the tyranny of the unions and every member had to enter into a legal bond that he would carry out the rules and instructions of the central committee. The members paid premiums to an insurance office which guaranteed their fidelity. In other words, they insured their own truthfulness."

"What about the 'hustling' of which we hear so much? Does it give good results?"

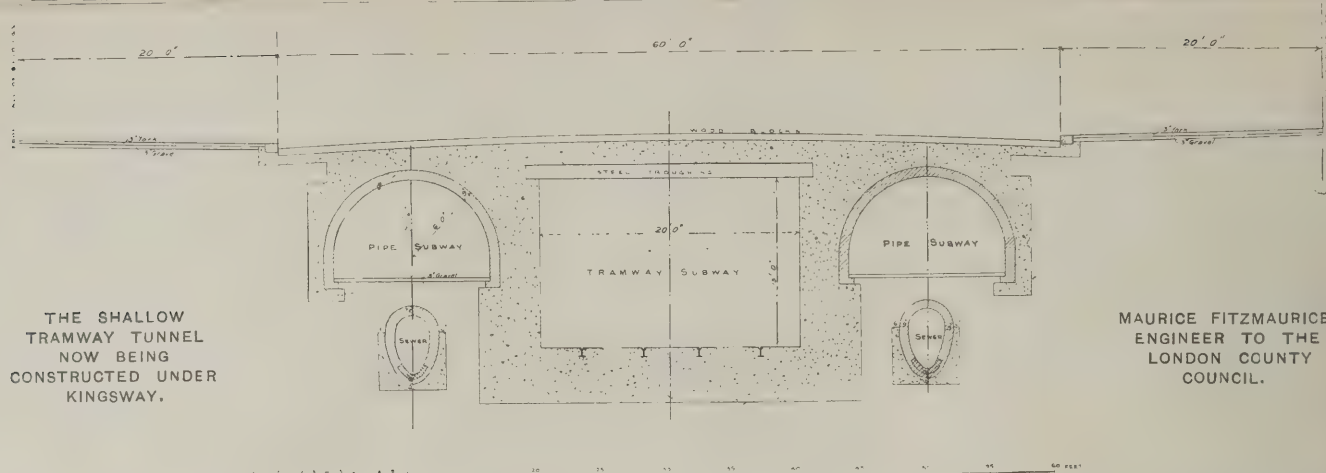
"It is the system of sub-contracts," said Mr. Holloway, "which makes hustling possible. The chief consideration on the part of everyone is to get the job done quickly. The business of the superintendent, therefore, is to drive the sub-contractors. Quality and expense are both sacrificed to speed. English workmen do better work than the Americans, though they might do more without disadvantage to the quality. But in America they err in the opposite direction."

"Would it not pay in England to give higher rates of wages to good and quick workmen?"

"It would be an advantage," said Mr. Holloway "if the men would agree to such a system. But they have a great objection to one man getting more than another. We have tried giving increased rates because we wanted first-class men, and have had one or two strikes in consequence. We had either to bring all the wages up to the scale of the highest, or reduce them all to the ordinary trade-union rate. In some ways, it must be admitted, the American working men are superior to our own. They are on the whole very smart, industrious and sober men. There seems to be very much less drinking amongst them than amongst workmen in the building trade here. A large proportion of the unskilled labourers in the building trade, especially in New York, are Italians; they are a sober, industrious people, certainly not equal to our English navvies for skill and hard work, but very reliable, and good timekeepers."

"You do not then find much in American methods that is worthy of imitation?"

"Not in regard to the management of men and the control of the work. But, as I said at the Society of Arts, their steelwork and their electrical work are in advance of ours. I think, too, their methods in regard to the supply of material are rather better than here. Firms who supply the steelwork, joinery and stone seem to adapt themselves



to meet the special requirements of the builder more than is generally done here. On large jobs in London we have to get our material at the convenience of the merchant and manufacturer, and sometimes much loss and inconvenience results through having to wait for material. In America the contractor controls the manufacturers to a greater extent, and he has his material almost to the hour."

In taking leave our representative remarked on the wide extent of Mr. Holloway's investigations into Transatlantic methods. "I found everyone most willing to show me everything and give me all information," was the reply. "The Americans are charming hosts and especially charming hostesses, and however much one may criticize their business methods one cannot but appreciate their personal qualities."

THE TRAMWAY TUNNEL UNDER KINGSWAY.

THROUGH the courtesy of Mr. Maurice Fitzmaurice, engineer to the London County Council, we are able to give this week a section of the shallow tramway tunnel now being constructed under Kingsway in connection with the Holborn-Strand improvement scheme. The tunnel will start from a spot close to the New Gaiety Theatre, will pass under the western arm of Aldwych, then north under Kingsway to Holborn, and so to Southampton Street, where it will come to the surface at a slope and join up with the existing tramway lines at Theobald's Road. On each side of the tunnel there will be a subway to accommodate gas and water pipes, electric mains, &c., and below each of these there will be a sewer. The whole scheme includes a continuation of the tunnel as far as the Embankment. The width of the tunnel will be 20ft. and the height from the crown of the arch to rail level 14ft. The pipe subways on each side of the main tunnel will be 12ft. wide, whilst the egg-shaped sewers beneath will be 2ft. 8in. by 4ft. 6in. The depth of the tunnel beneath the surface varies from 6ft. to 14ft., the greater depth being where the work passes under Holborn and the Strand. At these places the main tunnel will be divided into two smaller tunnels for convenience of construction. The work is of a very substantial nature, and when once it is completed there is no prospect that the roadway will be disturbed for very many years to come, so that, except for actual repair of the surface of the road, Kingsway is never likely to be "up." Special precautions have been taken to preserve the brickwork from decay by damp, there being a lining of asphalt about $\frac{3}{4}$ in. thick. The electric tramcars will be supplied with current from conductors laid in conduits. The work has so far been carried out on the "cut and cover" system, that is to say, a deep trench has been excavated, and when

the masonry work has been completed it has been filled in. There is, however, very little filling in needed, as the tunnel and subways occupy nearly the whole space. In passing under the Strand and Holborn the method of proceeding will be by the Greathead shield, which will enable the excavation to be burrowed out without disturbing the surface; there will thus be no stopping of the traffic in these important thoroughfares.

Enquiries Answered.

The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

The Pantheon, London.

CHESTERFIELD.—W. G. writes: "When was the Pantheon, in Oxford Street, demolished?"

It still stands, and is used as offices by Messrs. Gilbey, the wine merchants.

Timber Calculations.

TREDEGAR.—DEAL writes: "Please let me know the name and price of a good timber calculator."

"Tables for Cubing Timbers," by John Jellis (R. J. Bush, 146, Fleet Street, E.C., publisher).

Barge-Boards.

CHESHIRE.—APEX writes: "Are ordinary barge-boards and fascia-boards considered to be carpenter's work, and should they be executed in the material specified for carpenter's work?"

Barge-boards are carpenter's work. They are usually of oak.

Lynde's Loco Rust Chambers.

DUBLIN.—D. B. & D. write: "Who make the above, which, it is understood, are used under vent pipes by the War Department?"

The inventor is Mr. F. C. Lynde, A.M.I.C.E., and the manufacturers are the Loco Draining Apparatus Co., Ltd., 25, Cross Street, Manchester. HENRY ADAMS.

Coating Tank with Cement.

WIMBORNE.—E. J. B. writes: "I have been recommended to coat the inside of a new cast-iron tank with 'cement-wash' to prevent rust. Can you tell me how to prepare this wash and if any ingredient other than cement is used?"

Old Portland cement is used, simply made into a very thin consistency with plenty of water and applied with a brush. No other ingredient is used. It is not so efficient in such a thin coating when continually exposed to water as red-lead paint would be.

Fees for Settling Insurance Claims.

DERBY.—T-SQUARE writes: "What are the customary fees charged for settling a fire insurance claim against the insurance companies' assessors? Quantities have been prepared and the whole damage properly scheduled."

On the total up to £500, 5 per cent., on remainder 2½ per cent. Minimum fee £4 4s. Out-of-pocket expenses extra. These fees are calculated on the amount of settlement.

Books on Masonry.

MANCHESTER.—KEYSTONE writes: "(1) Kindly name a book containing plans, elevations and sections of a good stone building; (2) also the best book on geometry for a mason."

(1) "Specification" No. 6 (price 5s. nett, 5s. 9d. post free) and No. 7 (price 2s. 6d. nett, 3s. 3d. post free). (2) "Masonry and Stone Cutting," by E. Dobson, 2s. 6d. post free. These books may be obtained from our offices.

Damp Walls.

C. N. writes: "In a small house in a somewhat exposed position, gin. solid walls built in Portland-cement mortar, cement coated outside and finished with rough-cast, damp drives through on the south and west sides during heavy autumn and winter winds. Can you suggest any effective remedy? The only remedies I know of are 'Fluate' and Chambers's damp-resisting fluid, or other washes advertised."

We do not recommend any washes. A mixture of tar and pitch applied hot would be effective, but the best plan is to tile or slate-hang the walls.

Coal-Place Ventilation.

OVENDEN.—DOUBTFUL writes: "Should coal cellars or sheds to houses and coal stores generally be ventilated? One has heard at times of explosions on steamships, supposed to arise from gases, accumulating in the coal bunkers; but in this case one can conceive of there being heat at work by reason of the nearness of the boilers: in ordinary circumstances this cause would be absent."

There certainly should be some means of ventilation for coal cellars, not to ventilate the coal, but for the reason that persons have to enter them, and they may be put to other uses than simply the storage of coal. Usually all the ventilation needed comes from the coal plate and under the floors of a house. As regards ships' bunkers, the heat from the boiler has nothing to do with it.

Designs for Stables and Houses.

FIFE.—R. T. writes: "Is it possible for me to purchase designs for small stables, in single sheet form or collectively; also for mansions in the suburbs?"

We do not know of any designs for stables or houses published in separate sheets, and we do not commend the purloining of architect's work or the endeavour to do without

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Supplement to
THE BUILDERS' JOURNAL AND ARCHITECTURAL RECORD,
Wednesday, March 2nd, 1904.



DESIGN FOR A CRESCENT IN A LARGE CITY. (AWARDED A MEDAL OF



IN THE TITE PRIZE COMPETITION. 1904.) BY ARTHUR D. NICHOLSON.

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the employment of an architect, neither from the view of common honesty nor the personal advantage of the occupant. Each problem should be dealt with afresh wherever it is in the slightest degree different. The following books illustrate designs for houses:—Briggs's "Bungalows and Country Houses" (12s. 6d.), Batsford's "Country Houses" (15s.), James Williams's "Sketches of Village and Estate Buildings" (15s.), C. Wickes's "Handy Book of Villa Architecture" (31s. 6d.). These can be obtained post free from our offices for the prices stated.

Weather Pointing.

SHEFFIELD.—H. M. M. writes: (1) "I am called upon to keep the water out of the stone walls of a villa. To do this it requires repointing. Is it better to do this with a trowel or an iron jointer? (2) Is there any objection to 1 of Portland cement and 2 of ground lime-mortar being used for the job?"

The weather pointing with trowel is slightly better than the form made with an iron jointer in ordinary brickwork, but with rough blocks of stone there is practically nothing to choose between the two; if anything the ruled joint is the better, as the blocks adjoining it being rough-edged, water would find an additional lodgment in the space formed by a bevelled joint.

Efflorescence on Cement.

TORQUAY.—JAY writes: "What is the cause of efflorescence on the face of a newly-plastered brick pier about 3ft. square? The pier is built in cement—externally Portland, internally plastered in 'Adamant.' The efflorescence apparently strikes through from the brick joints and spreads thickly over the face of the 'Adamant,' scaling the colour with which it is covered."

All gypsum cements are liable to efflorescence in the presence of damp, for gypsum is soluble in water, and when the surface dries it of course crystallizes out. "Adamant" is a gypsum cement, and the efflorescence indicates that the pier or wall is damp. Whether the brickwork is likely to be permanently or only temporarily so is for you to judge, knowing the facts, but we imagine that it is only the latter, and it would be best to leave the work to dry out thoroughly, and to brush off the efflorescence before colouring or papering.

Projections beyond Building Face.

HALIFAX.—YORKSHIRE TYKE writes: "Referring to an enquiry in your issue of February 10th as to a shop cornice being 10ft. high from back edge of causeway, and the lowest projection from face of building, the querist wishing to know whether the council could enforce the setting back of the building so that no cornice or any other projection would overhang the footpath, I have passed and carried out plans in town and country for more than thirty years, and have always taken the frontage line to mean the face of the building; cornices, strings, caps, eaves and other projections coming in front of this without any question being raised. I have also been allowed to bring area gratings and coal plates 6in. in advance of the face of the building, and bottom steps 3in. or 4in., without demur. Perhaps you can give reasons for or against the above."

Upon the principle that "the land that you buy is yours to the sky," there is no doubt whatever that any portion of a building which is brought out beyond the building line is an encroachment on the highway, and I think section 156 of the Public Health Act, 1875, which I quoted in my former reply, is quite explicit on this subject. The cases you name as occurring in your own experience are not contradictory to the above, but merely show that local authorities in many cases are sufficiently generous in their application of the law. F. S. I.

Architect's Charges.

ETIQUETTE writes: "I happen to have two jobs, entirely distinct, in the same district (about 60 miles from London), and I generally arrange to visit both on the same day. Am I justified in charging my full expenses to each client, or should I only charge half to each? Taking a parallel case, I know that country doctors charge their patients mileage though they often visit half a dozen in one round."

It is a question of conscience. For our part we think that in a matter like this outside professional knowledge and experience should be charged proportionately to the time and money involved, and if you save in expenditure you should let your clients have the benefit of it.

Calculating Floor Scantlings.

LONDON.—A CONSTANT SUBSCRIBER writes: "Kindly show me a short method for calculating the scantlings of a floor 20ft. by 30ft.—(1) for a lecture-room floor with two wood girders and rin. flitched plate, wood binders and common joists; (2) for a warehouse floor, 3 cwt. per ft., boxed rolled joist girder, wood binders and common joists."

The simplest formula for the strength of fir beams is $w = \frac{bd^2}{L}$ without any coefficient,

w being safe load distributed in cwt., b breadth in inches, d depth in inches and L span in feet. This allows a factor of safety of 7, which is not too much for permanent work and saves all the trouble of first finding breaking weight in centre, then converting to distributed load and reducing to safe load. For simple joists the common rule is depth in inches = $\frac{1}{2}$ span in feet + 2, and thickness = $\frac{1}{3}$ depth. The load to be provided for in a lecture-room is, say, 1½ cwt. per sq. ft. and for a warehouse 2½ cwt. and upwards, exclusive of weight of floor itself. A flitch plate may be taken as adding to the safe distributed load on a beam by the following amount, $w = \frac{ftd^2}{L}$, where f = 12 for wrought-iron or 16 for steel, t = thickness of flitch plate in inches, d = depth in inches, L = span in feet. For strength of box girders see "Designing Ironwork," 2nd Series, Part I., Steel Girders (F. & F. N. Spon, Ltd., 12s. 6d.). HENRY ADAMS.

Strength of Fletton Brick Piers.

E. A. H. writes: "A pier 2ft. 3in. by 2ft. 3in., standing between two shop fronts 12ft. high from floor-level to underside of girders, carries a dead load of 72 tons. An 18in. wall dividing the shops (and superstructures) abuts centrally against back of pier. The pier in the basement below is 3ft. by 2ft. 3in. by 10ft. high, with the division wall at back 2½ bricks thick, and one 18in. thick dividing vaults under pavement, abutting against the front of the pier. All the brickwork is built with Fletton bricks laid in 1 of Portland cement to 4 of sand. There are three storeys above the shop, used as showrooms and workshops for a light clothing business. What margin of safety do you consider this allows?"

Fletton bricks in cement may be considered equal to good London stocks in cement, but 4 of sand to 1 of cement is rather a high proportion, 3 to 1 being more usual. The safe working load on a cube of this brickwork might be taken as 6 to 9 tons, the latter as a maximum for dead loads only. The crushing strength at the point of first fracture would be somewhere about 60 tons, provided the brickwork had been built under close supervision. When a pier is bonded to a party-wall it is not safe to consider that it will carry more than if built independently, as the bonding is often not very good, and the pier being generally under a greater load than the wall tends to settle more, and therefore to strain the bonding. A pier will carry

less than a cube of brickwork, but no reduction is usually made if the height does not exceed six times the diameter. The reduced load on a high pier should be $w \left(\frac{24-r}{18} \right)$,

where w is load as given above and r ratio of height to least diameter. In this case the pier is $\frac{12}{2 \cdot 25} = 5\frac{1}{3}$ diameters high, so that no

reduction need be made. The pier being 2ft. 3in. square, the safe load would be $2 \cdot 25^2 \times 9 = 45 \cdot 6$ tons. If a load of 72 tons is put upon the pier it is probably within one-fourth of the breaking weight, and is greater than it should be, having due regard to all contingencies. HENRY ADAMS.

Alterations and Right of Light.

HEXHAM writes: "A wishes to build a kitchen by pulling down a scullery which has windows facing into the yard. B, the adjoining owner, objects on the ground that it will interfere with his light; but taking a line from B's scullery window-sill at an angle of 45 degs. it comes about 1ft. 6in. above the wall-plate. B holds that this does not always apply; also that A cannot build on the party-wall—not even on A's own 4½ in.—without B's consent. B objects to the kitchen chimney, saying that the smoke will go into his bedroom over the scullery. What are his and A's rights in the matter?"

It would be much wiser, and in the end more economical, to consult a reputable local solicitor than to endeavour to fathom the intricacies of the Prescription Act for yourself. B, however, is so far right that there is no mention of any such angle as 45 degs. in the Act, and that he can claim damage for any material loss of light to an ancient window—just to the extent to which it causes him damage and no more. A farthing would probably well represent the damage done by the very slight obstruction of light to a scullery window which seems to be contemplated. With regard to the party-wall, everything depends upon whether it is a true party-wall, to the use of the whole of which each party has certain rights, and whether, if this be the case, it is within the Metropolitan area, where the London Building Act would apply, or whether it belongs wholly to one or other party. This can only be determined by consulting the plans or old deeds of conveyance, but its position on plan very strongly suggests that it belongs wholly to A on account of its not being in line with the party-wall between the houses, in which case he can probably do as he likes with it unless B has, by lapse of time, acquired any right of support from it, say to fruit trees. If the smoke from the chimney were to prove a nuisance, B would have a right of action for its abatement, and on this point A had better meet his wishes, carrying the chimney up high enough to discharge well above his windows. Could not A and B meet and agree to some arrangement?

G. A. T. M.

Obituary.

Mr. Percival Gordon-Smith, late architect of the Local Government Board, died at Putney last Tuesday week at the age of sixty-four years. The funeral took place at Putney Vale Cemetery last Saturday.

Mr. John Bevan, a well-known Bristol architect who was associated for many years with ecclesiastical work in that city and other parts of the country, died recently at Brislington. He was the architect of five modern Bristol churches. In addition there are many examples of other work by him in the city. Mr. Bevan was sixty years of age. He had been in practice for upwards of thirty-five years.

BINHAM PRIORY, NORFOLK.

THE remains of this ancient priory are scanty, considering the size of the original church and monastic buildings, traces of which still exist. Founded about the year 1100 A.D. by Peter de Valoines, nephew of William the Conqueror, as a cell to the Benedictine Abbey of St. Albans, the priory was built almost entirely in the Norman style. It consisted of chancel, transepts and nave. The nave alone remains, and is still used as the parish church, a function which it fulfilled in monastic days, being divided from the rest of the building by a wall built in the twelfth century. The aisles have only recently fallen into ruin, that on the south having formed one side of the cloisters, the outline of which can easily be traced, with the refectory and other conventual buildings grouped around. The church as it now stands is a fine example of Norman work, with triforium and clearstory; the three westernmost bays are of a later date, exhibiting good Early English workmanship, as also the beautiful west front, which still manifests its former magnificence in spite of the fact that the splendid window is almost entirely blocked up. The construction of this noble front was evidently carried out at different dates, there being a distinct difference in the workmanship above the level at which the main arch springs; also, this arch is obviously not struck as the original designer intended.

The west windows of the ruined aisle

have an interesting peculiarity, a transom being formed at about a third of their height, a very rare occurrence in Early English windows, but the reason for this is clearly apparent from the interior, the vaulting and floor over the aisles finishing on the transom, so that the aisles are lit by the lower portion of the window, while the upper portion lights the triforium.

The arcade of the lower storey of the west front, which forms the subject of the drawing by Mr. Leslie T. Moore reproduced in our centre plates this week, is in excellent preservation, the beautiful dog-tooth ornament, although deeply undercut, being almost perfect. From the character of the foliated capitals on either side of the great west door it is probable that a French mason was employed to carve these and possibly other details.

The proportions of the interior are entirely spoiled, for when the old priory buildings were destroyed the drainage was neglected and in a succeeding age of dull utilitarianism the floor was raised 3ft. in order to keep it dry. This crude device dwarfs the Norman arcade of the nave, and completely hides the ancient sedilia and other interesting features.

The chief gateway, or so-called Jail Gate, is situated to the west of the priory, and was evidently carried out in the Early English style. To the north of the priory, which is built on rising ground, a brook runs through the precincts, on the banks of which are the ruined remains of a mill which was used by the monks.

CLERKS OF WORKS' ASSOCIATION.

THE twenty-first annual dinner of the Incorporated Clerks of Works' Association of Great Britain was held at the Holborn Restaurant on February 22nd, Mr. Edwin T. Hall, F.R.I.B.A., presiding.

Mr. M. J. Aitchison, in proposing the "Architects and Surveyors," spoke of the good relations which existed between architects and clerks of works, observing that though there would necessarily be some friction between them at times, such cases were few and far between.

Mr. Henry T. Hare (president of the Architectural Association), in replying, said he had heard it stated there were three essentials to the proper carrying out of a building contract, constituting the A B C of it—the architect, the builder and the client. In this however there was a serious omission, namely, the clerk of works, without whom he was sure no building of importance would be erected. When the work was being executed at a distance, and the architect was only able to pay an occasional visit, he was almost entirely in the hands of his clerk of works, and it was very much in the latter's power to make or mar the building. He (Mr. Hare) was happy to say that he had never had to complain of the incompetence of a clerk of works. He believed they were a thoroughly trained and high-minded body of men.

Mr. J. M. Deacon, F.S.I., who replied for the surveyors, said that some dissatisfaction existed in regard to the Surveyors' Institution. A small number of surveyors had met and agreed that the Institution did not properly represent them. They had therefore put forward a petition that in future two quantity surveyors should be permanently on the council, with whom the London quantity surveyors should work in all matters relating to quantity surveying; also in the list of members it should be indicated whether they were quantity surveyors, land surveyors or auctioneers. He hoped the Institution would agree to these proposals.

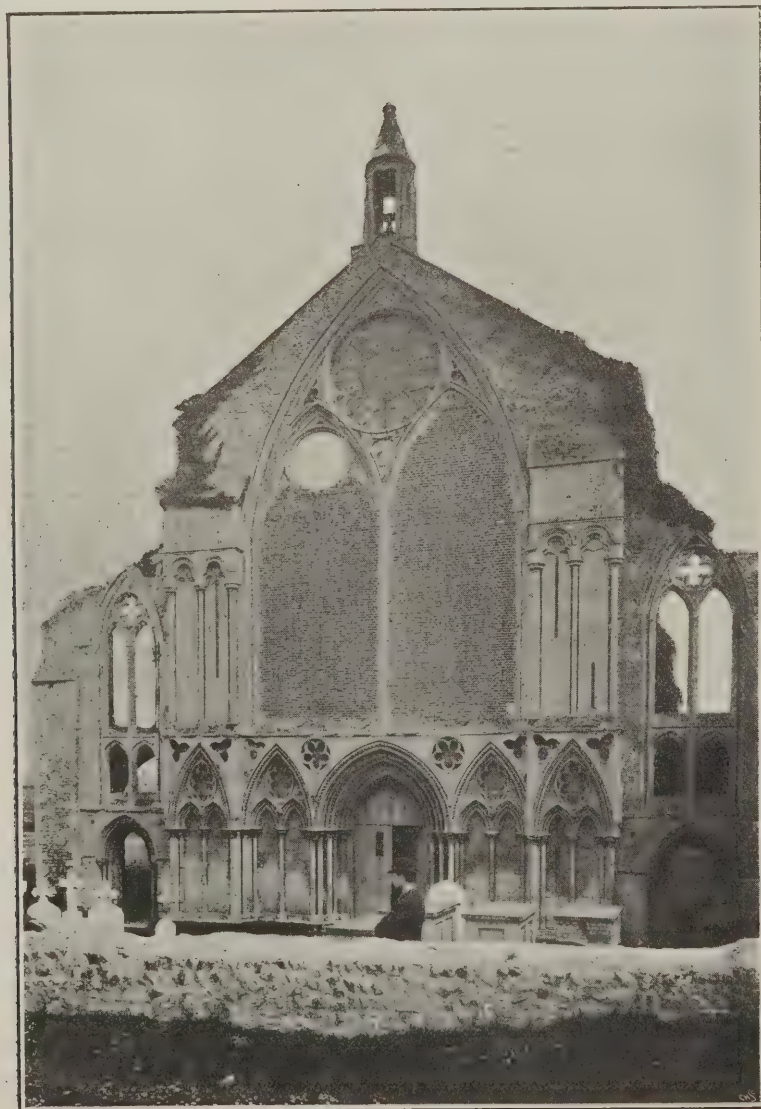
Mr. George Roberts proposed "The Worshipful Company of Carpenters." Mr. J. Hutton Freeman, clerk to the Company, who replied, said they were only too glad to help the Association to maintain the status of the clerk of works by means of lectures, &c. The Company, he thought, must have a specially cordial feeling towards clerks of works because in the old days the Master and Wardens had exercised somewhat the same powers in viewing buildings and condemning what was defective. The Company was now drawing special attention to forestry, and he trusted that all interested would support them in their efforts.

Mr. Edwin T. Hall, in proposing the toast of the evening, observed that this was the first year of incorporation of the Association and he was told that a benevolent fund was contemplated, which would be a valuable adjunct. It gave him great pleasure to be there that evening and he wished success to the Association.

Mr. J. T. Rees, the president, replied. He observed that during this year more members had joined than for many years past. Much of their success was due to Mr. Dashwood and to Mr. Pain, their treasurer and hon. secretary.

Other toasts followed, Mr. W. Pitts proposing "The Visitors" and Mr. R. H. Kellond "The Chairman."

Competition Reform Society.—The committee disapproves the conditions in the competition for an isolation hospital at Barnet, for the reason that there is no professional assessor. Members are requested to abstain from competing unless the conditions are satisfactorily revised.



BINHAM PRIORY NORFOLK WEST FRONT.

Construction Notes.

Putty. To most persons putty is putty and nothing more. To the glazier and painter it is a common article which, through long custom, he regards as a thing established, one of the things that will not change, come what come will, like leather to the shoemaker. Yet it is not so simple as it appears to be. The importance of putty is recognized by all, but there is not sufficient attention paid to its composition and its use. People seem to consider it only in the nature of things that putty shall get friable, contract and fall away, and the attendant expense of its renewal is accepted with good grace. The trouble is all traceable to bad putty and laxness due to ignorance of its nature or the purpose it has to fulfil. Carelessness has of late years allowed the average quality of putty to deteriorate, and various qualities are sold which are quite unsuitable, and are especially objectionable for use on work which is subjected to considerable variations of temperature and atmosphere, as nearly all things are in this country. The following are the most frequent ways in which the bad quality of ordinary putty affects buildings:—(1) The putty shrinks, dries and cracks, and falls away from glass windows or roofs, allowing the rain to drive through, and if the glass is not properly sprigged in (which is very often the case) it will rattle and eventually break in a high wind, with consequent great danger; (2) the putty used for stopping dries and shrinks and renders paint-work unsightly, and entails its being re-done oftener than it otherwise would be. With large glass roofs such as conservatories, greenhouses, forcing-houses, the expense of continually renewing the putty is very great. Here the problem is one of urgency, and many systems of puttyless glazing have been devised to overcome the difficulty, but the initial expense is of course much greater and does not pay in all cases. The cost in labour for stripping, stopping and painting glass buildings or roofs is out of all proportion to the price of the putty and paint used. Ordinary putty is supposed to be made of linseed oil and whiting. Hard putty is made of equal parts of dry white lead and whiting with a little litharge and linseed oil. Hard stopping is made from paste white lead, dry white lead and jappanners' gold size or hard drying varnish. Extra hard stopping may be made of dry white lead and litharge in equal parts, beaten up with jappanners' gold size and boiled oil. Litharge and white or red lead are added to quicken the hardening of putty, but they cause it to shrink, and make it difficult to remove when necessary. Genuine linseed-oil putty cannot be relied on to stand for what may be considered a reasonable period under all conditions, for the reason that the amount of linseed oil does not permanently bind its proportionate amount of whiting, and when it sets it absorbs moisture, with consequent decay. But when, as generally is the case, the oil is far from the best and white or red lead has been introduced to make it harden sooner, so that the painter may quickly follow over, the whole result is unsatisfactory and cannot be depended upon. With the object of meeting these defects, Messrs. Walter Carson & Sons, of Grove Works, Battersea, London, the great manufacturers of putty, have recently introduced a new make which they call "Plastine." It contains no tallow or grease of any description (which is sometimes added to putty with the erroneous idea of increasing its durability) and is free from white or red lead. We have had the opportunity of testing it in comparison with ordinary putty, and after two years' exposure we find that whereas ordinary linseed oil putty, though not perished, has become hard

and shrunk and cracked, Carson's "Plastine" is as good as when first put on, being still soft and elastic under a mere skin. Within twenty-four hours a skin is formed on the surface which will take paint, and thus the requirements of painters are met. The under-part remaining soft and elastic, renders its removal easy at any time. Another point worth mentioning is that it does not set hard in the packages, like ordinary putty, and consequently the loss of time and money in kneading before use is avoided. "Plastine" can be employed for every kind of glazing, both wood and iron, and it is now being used extensively by Government departments, public authorities, railway companies, horticulturists, and others who have the upkeep of large glass roofs and buildings. The small additional outlay incurred by the substitution of "Plastine" for putty will be saved many times over by the increase in durability, and we strongly advise the specification of it in all new works or repairs. H. K. D.

Views and Reviews.

A Splendid Monograph.

Such a monograph as this is worthy of a Berlin firm! It could not be better done, and both publisher and architect—and the photographer—are to be congratulated on the success of it. The Royal Insurance building at Liverpool is one of the most important blocks erected in that city during recent years. We are reminded of another great business house there, the White Star, to which it bears some resemblance in parts, which is not surprising, for Mr. Shaw was retained as advisory architect when Mr. Doyle was the successful competitor among the six other architects who were invited to submit designs. Mr. J. Newby Hetherington contributes some notes about the history, planning, steelwork and sculpture of the building, but the book is of course chiefly valuable for the thirty-one large collotype plates of the interior and exterior. As a frontispiece, a perspective view of the Dale Street and North John Street fronts is given, similar to that published in our centre plates on December 30th last.

"The Royal Insurance Co.'s Building, Liverpool." J. Francis Doyle, Architect. London: B. T. Batsford, 94, High Holborn, W.C., price 21s. nett.

Bankruptcies.

[Abbreviations: R.O.—receiving order; P.E.—public examination; C.C.—county court; O.R.—official receiver; Adj.—Adjudication]

W. POWELL, builder, St. Helen's. R.O. Feb. 16th.
W. CLARKE, builder, King's Norton. R.O. Feb. 16th.
J. R. E. PRATT, builders' material merchant, Balham. R.O. Feb. 16th.
J. PLUMRIDGE, timber merchant, High Wycombe. R.O. Feb. 15th.
J. COOPER, plasterer and builders' merchant, Stockton-on-Tees. Adjudication annulled Feb. 17th.
A. F. GIBB, painter and plumber, Strood. R.O. Feb. 20th.
W. J. BYGRAVE & SON, builders, Greasley, Notts. R.O. Feb. 17th.
J. W. COCKE, builder and contractor, Mansfield. R.O. Feb. 17th.
W. POLLEY, builder and contractor, Cowley. P.E., Oxford County Court, March 16th at 11.30.
F. W. RUFEBORTH, slater and builders' merchant, Scarborough. P.E., Scarborough C.C., March 29th, at 12.
A. F. SMITH, joiner and builder, Harrogate. R.O. Feb. 13th. P.E., York Courts of Justice, March 4th, at 11.
H. JONES, builder and contractor, Llanberis. R.O. Feb. 19th.
W. & R. WILLIAMS, builders and contractors, Hove. R.O. Feb. 18th.
P. G. CHISHOLM, plumber, Thornaby-on-Tees. R.O. Feb. 16th.
L. JOHNSON, joiner and builder, Sheffield. First meeting, O.R.'s, Sheffield, March 2nd, at 12.30. P.E., Sheffield C.C., March 19th, at 2.
S. & F. SMITH, builders, Yarmouth. Gross liabilities £6,437; £1,835 expected to rank; assets £744; deficiency £1,91.
F. THORPE, builder, Hastings and Bexhill. First meeting, Hastings C.C., March 8th, at 11.15. P.E., Hastings Town Hall, March 8th, at 12.

W. R. THOMAS, builder, Swansea. Gross liabilities £7,566; expected to rank, £7,056; assets £13; deficiency £7,043.

C. W. BARLOW, plumber, painter and estate agent Barrow-in-Furness. First meeting, O.R.'s, Barrow, March 2nd, at 11.30. P.E., Barrow Magistrates' Court, same day, at 3.

J. T. ENTWISTLE, builder, Wolverhampton. First meeting, O.R.'s, Wolverhampton, March 3rd, at 11.30. P.E., Wolverhampton C.C., March 6th, at 11. Gross liabilities £7,909; surplus estimated by debtor at £161.

Current Market Prices.

		£	s	d.	£	s	d.
FORAGE.							
Beans ..	per qt.	1	14	0	2	0	0
Clover, best ..	per load	4	0	0	4	7	6
Hay, good ..	do	3	12	6	4	0	0
Sainfoin mixture ..	do	3	12	6	4	2	6
Straw ..	do	1	10	0	2	0	0
OILS AND PAINTS.							
Castor Oil, French ..	per cwt.	1	0	5	—	—	—
Colza Oil, English ..	do.	1	3	6	—	—	—
Copperas ..	per ton	2	0	0	—	—	—
Lard Oil ..	per cwt.	2	15	0	2	17	0
Lead white, ground, carbonate ..	do.	1	4	10	—	—	—
Do. red ..	do.	1	0	4	—	—	—
Linseed Oil, barrels ..	do.	0	17	9	—	—	—
Petroleum, American ..	per gal.	0	0	7	0	0	7
Do. Russian ..	do.	0	0	5	0	0	7
Pitch ..	per barrel	0	8	0	—	—	—
Shellac, orange ..	per cwt.	9	12	0	—	—	—
Soda, crystals ..	per ton	3	2	6	3	5	0
Tallow, Town ..	per cwt.	1	5	3	—	—	—
Tar, Stockholm ..	per barrel	1	2	0	—	—	—
Turpentine ..	per cwt.	2	4	0	—	—	—
METALS.							
Copper, sheet, strong ..	per ton	70	0	0	—	—	—
Iron, Staffs., bar ..	do.	6	0	0	8	10	0
Do. Galvanised Corrugated sheet ..	do.	10	5	0	10	7	6
Lead, pig, Soft Foreign ..	do.	11	15	0	11	6	3
Do. do. English common brands ..	do.	12	2	6	12	5	0
Do. sheet English 3lb. per sq. ft. and upwards ..	do.	14	0	0	—	—	—
Do. pipe ..	do.	15	0	0	—	—	—
Nails, cut, clasp, 3in. to 6in. ..	do.	9	5	0	—	—	—
Do. floor brads ..	do.	9	0	0	—	—	—
Steel, Staffs., Girders and Angles ..	do.	5	10	0	6	5	0
Do. do. Mild bars ..	do.	6	0	0	6	5	0
Tin, Foreign ..	do.	123	7	6	123	17	6
Do. English ingots ..	do.	125	10	0	127	10	0
Zinc, sheets, Silesian ..	do.	24	5	0	—	—	—
Do. do. Vieille Montaigne ..	do.	24	10	0	—	—	—
Do. Spelter ..	do.	22	2	6	22	7	6
TIMBER.							
Soft Woods.							
Fir, Dantzic and Memel ..	per load	1	13	0	3	0	0
Pine, Quebec, Yellow ..	do.	5	5	0	6	5	0
Do. Pitch ..	do.	2	11	0	2	16	0
Laths, log, Dantzic ..	per fath.	4	10	0	5	10	0
Do. Norrköping ..	per bundle	0	0	7	—	—	—
Deals, Sundsvall, Yellow, 5th, 3 x 11 ..	per std.	8	0	0	8	5	0
Do. Umba, Yellow, 5th, 3 x 11 ..	do.	6	5	0	—	—	—
Do. Skellefteå, Yellow, Unsorted, 3 x 8 ..	do.	9	0	0	—	—	—
Do. Nystad and Obo, Yellow, Unsorted, 3 x 8 ..	do.	7	10	0	—	—	—
Do. do. White, Unsorted, 3 x 8 ..	do.	7	15	0	—	—	—
Do. do. do. 3 x 7 ..	do.	7	10	0	—	—	—
Do. Archangel, White, 1st, 3 x 11 ..	do.	14	5	0	—	—	—
Do. do. do. 3 x 9 ..	do.	12	0	0	—	—	—
Do. Nederkalix, Yellow, 1st, 4 x 11 ..	do.	18	15	0	—	—	—
Do. do. do. 4 x 8 ..	do.	10	15	0	—	—	—
Do. do. Yellow, 2nd, 4 x 11 ..	do.	12	5	0	12	10	0
Do. Pentecost, Bright Spruce, Unsorted, 3 x 9 x 13ft. ..	do.	8	5	0	—	—	—
Do. do. do. 3 x 9 x 12ft ..	do.	8	10	0	8	15	0
Do. St. Petersburg, White, 1st, 3 x 11 ..	do.	9	0	0	9	5	0
Do. Montreal, Pine, 1st, 3 x 9 ..	do.	24	10	0	—	—	—
Do. do. Red Pine, 1st, 3 x 9 ..	do.	11	10	0	—	—	—
Battens, all kinds ..	do.	6	5	0	12	5	0
Scantlings ..	do.	6	1	0	9	15	0
Flooring Boards in. pre-							
pared, 1st ..	per square	0	11	9	0	12	0
Do. 2nd ..	do.	0	8	0	0	11	0
Do. 3rd, &c. ..	do.	0	7	9	0	8	6
HARD WOODS.							
Ash, Quebec ..	per load	3	12	6	—	—	—
Birch, Miranichi, Planks, 3 x 5 to 16in. ..	per cu. ft.	0	0	11	—	—	—
Box, Turkey ..	per ton	15	0	0	20	0	0
Cedar, Cuba ..	per ft. sup.	0	0	4	—	—	—
Do. Honduras ..	do.	0	0	4	—	—	—
Do. Tobasco ..	do.	0	0	5	—	—	—
Elm, Quebec ..	per load	4	2	6	—	—	—
Mahogany, Average Price for Cargo, Honduras ..	per ft. sup.	0	0	6	—	—	—
Do. do. African ..	do.	0	0	4	—	—	—
Do. St. Domingo ..	do.	0	0	3	—	—	—
Do. Cuba ..	do.	0	0	6	—	—	—
Do. Lagos ..	do.	0	0	3	—	—	—
Do. Benin ..	do.	0	0	4	—	—	—
Do. Tobasco ..	do.	0	0	7	—	—	—

Keystones.

The Buildings at Cambridge opened yesterday by His Majesty the King comprise the new Geological Museum, new Law School and Library, and new Botanical Laboratory (of which Mr. T. G. Jackson, R.A., is the architect), and the new Medical School, the architect of which is Mr. E. S. Prior, M.A.

Cardiff School Competition.—The assessor appointed to adjudicate in the competition for designs for the proposed new school at Canton, Cardiff, has awarded the designs of Messrs. James & Morgan, of Charles Street, first place and the premium of £50. The second and third premiums of £40 and £30 have been awarded to Mr. J. H. Phillips and Mr. E. H. Bruton respectively. The estimated cost of the buildings is between £18,000 and £20,000.

Scaffolding.—At a recent meeting of the Edinburgh Architectural Association Mr. Robert H. Bow read a paper on "The Strength of Scaffolding." After referring to some opinions regarding the force of the wind and factors of safety, he dealt with the subject of scaffoldings for steam cranes, and pointed out the weaknesses arising from imperfect general bracing and the dependence on girder connections between the towers. He alluded to the unsatisfactory stiffening secured by the use of cross-girders, and stated that he preferred in all directions some form of bracing, the strength of which could be calculated.

The Leeds new Markets.—Under the guidance of their instructor, Mr. James Neill, the students attending the building construction classes at the Leeds Institute recently visited the Leeds market hall and shops, now being completed in Vicar Lane (Messrs. Leeming & Leeming, architects); 172 students attend these classes, and during the latter half of the session visits are paid to buildings in course of erection in the city with a view of imparting practical knowledge, of the utmost importance in this subject.

The West End of Hereford Cathedral is to be dedicated on March 25th, after restoration from Mr. Oldrid Scott's design. The pinnacles and upper part had been rendered insecure by the earthquake of 1896, while the whole façade as rebuilt by Wyatt in 1786 was considered unworthy of the rest of the cathedral. An entirely new west portal, with rich double doorways into the cathedral, has been erected, and the remainder of the walling and the projection of the two heavy buttresses, between which the portal has been placed, have been re-faced. The renewal of the west front of the side aisles, with the addition of massive turrets, will eventually be undertaken.

Rowton Houses, Ltd.—The tenth annual report states that the balance to the credit of revenue account, after paying the dividend on the preference shares, is £7,840. The directors recommend a dividend at the rate of 5 per cent. per annum on the ordinary shares for the year, leaving £715 to be carried forward. A freehold site of about an acre has been acquired in Arlington Road, Park

Street, Camden Town, near the Britannia, upon which it is proposed to erect the largest house yet undertaken by the company. The foundations are now being put in, and the building operations will be pushed forward as rapidly as possible. In order to provide additional capital for this building the directors have decided to issue the balance of the authorized ordinary shares, amounting to £25,000 shares, which they now offer to the shareholders for subscription at par.

R.I.B.A. Elections.—At the meeting of the Royal Institute of British Architects held on Monday the following were elected:—As Fellows: A. E. Bartlett (London), T. Cooper (Birmingham), Banister F. Fletcher (London), S. F. Harris (Northampton), Arthur Keen (London), C. R. G. Hall (London), F. M. Kent (Pietermaritzburg), H. W. Johnson (Market Harborough) and A. H. Parker (Worcester). As Associates: H. W. Asman (Bradford), L. L. Bright (Nottingham), M. N. Castello (London), H. W. Cubitt (London), W. R. Davidge (London), W. J. Delbridge (London), G. Dykes, jun. (Glasgow), H. T. Fowler (Barrow-in-Furness), H. Griffiths (London), E. G. H. Gunn (London), W. Hemingway (Bolton), H. W. Hobbiss (London), F. G. Johnson (Risca, Mon.), J. S. Lee (London), H. B. Mackenzie (London and Cardiff), F. W. Newman (London), H. M. Pritchard (Cardiff), T. H. Robinson (London), A. Rollo (London and Glasgow), G. L. Russell (London), H. W. Stone (Birmingham and Taunton), J. J. Wood (Leeds). As Hon. Corresponding Member, Glenn Brown, Fellow, American Institute of Architects.

Complete List of Contracts Open.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
BUILDING:			
Mar. 3	Sligo—Shed	Harbour Commissioners	T. J. Mercer, Secretary, Harbour Office, Sligo.
" 3	London—Repairing Police Stations, &c.	Receiver for Metropolitan Police Corporation	Police Surveyor, New Scotland Yard, S.W.
" 3	Norwich—Public Convenience	Commissioners of H.M. Works, &c. ..	A. E. Collins, City Engineer, Guildhall, Norwich.
" 3	Buxton—Post Office	Guardians	Secretary, H.M. Office of Works, Storey's Gate, London, S.W.
" 4	Hutton, Essex—Homes and Schools, &c.	School Board	Holman & Goodhead, 6 King's Bench Walk, Temple, E.C.
" 4	Blaenavon, Mon.—School	Commissioners of H.M. Works, &c. ..	B. J. Francis, Architect, Abergavenny.
" 4	London—Superstructure of Northern District Post Office ..	Urban District Council	Secretary, H.M. Office of Works, Storey's Gate, London, S.W.
" 4	Barking, Essex—Cement and Bricks	—	H. Hargreaves, Clerk, Public Offices, Barking, Essex.
" 4	Bristol—Bricks and Lime	—	City Valuer, Council House, Broad Street, Bristol.
" 4	Crowle, Lincs—Chapel, Vestries, &c.	—	T. B. Thompson, 15 Parliament Street, Hull.
" 4	Cefn, near Merthyr, Wales—Chapel	—	T. Roderick, 50 Giebeland, Merthyr.
" 4	Dewsbury—Shed, &c.	—	Holton & Fox, Architects, Corporation Street, Dewsbury.
" 4	Gravelly Hill, near Birmingham—Disinfecting House ..	Aston Union Guardians	Whitwell & Son, 23 Temple Row, Birmingham.
" 4	Maryport, Cumberland—House	J. Hodgson	C. Eaglesfield, Architect, Maryport.
" 4	Resolven, near Neath, Wales—Library	—	J. C. Rees, Architect, Neath.
" 4	Wrexham—Five Houses and Shop	—	J. Pinder, 98 Ruabon Road, Wrexham.
" 4	Cardiff—Building Materials	Guardians	A. J. Harris, Clerk, Queen's Chambers, Cardiff.
" 4	Mawdesley, near Ormskirk—Church	—	J. J. Green, 19 South John Street, Liverpool.
" 4	Abergavenny—Alterations to School	School Board	E. A. Johnson, Architect, Abergavenny.
" 5	Milom—Two Houses	—	Settle & Brundrit, Architects, Ulverston.
" 5	Thornhill, Yorks—Buildings	Urban District Council	S. W. Parker, Surveyor, Council Offices, Thornhill.
" 5	Wimlton Inn	G. Parker	J. G. Crone, 21 Grainger Street West, Newcastle.
" 5	Colchester—Bricks	Roads and Drainage Committee ..	H. Goodyear, Borough Surveyor, Town Hall, Colchester.
" 5	Hereford—Bricks and Cement	Roads Committee	City Surveyor, Mansion House, Hereford.
" 5	South Shields—Bricks and Cement	Corporation	S. E. Burgess, Borough Surveyor, Chapter Row, South Shields.
" 5	Lisnaskea, Ireland—Nineteen Cottages	Rural District Council	J. O. R. Hoey, Clerk, Council Offices, Lisnaskea.
" 5	Braintree—Repairs to Schools	Education Committee	J. Gleave, Clerk, Vestry Hall, Braintree.
" 5	London, W.—Lime, Cement, &c.	St. Marylebone Borough Council ..	J. Wilson, Town Clerk, Town Hall, St. Marylebone, W.
" 7	Spennymoor—School	Tudhoe School Board	F. H. Livesay, Architect, Bishop Auckland.
" 7	Mortlake—Cement	Barnes U.D.C.	G. B. Tomes, Surveyor, Council Offices, High St., Mortlake, S.W.
" 7	Ilford, Essex—Cement and Lime	Urban District Council	H. Shaw, Engineer, Town Hall, Ilford.
" 7	Birmingham—Power Scheme Buildings	Corporation	J. D. Watson, Drainage Board, Tyburn, near Birmingham.
" 7	Hull—Library	Public Libraries Committee	J. H. Hirst, City Architect, Town Hall, Hull.
" 7	London, S.E.—Convenience	Lewisham Borough Council	Surveyor, Town Hall, Catford.
" 7	London, S.E.—Repairing, &c., Public Baths	Lewisham Borough Council	Surveyor, Town Hall, Catford.
" 7	Whitechurch, Hants—Reconstructing Bridge	—	W. J. Taylor, County Surveyor, The Castle, Winchester.
" 7	London, N.—Lime and Cement	Urban District Council	E. H. Lister, Clerk, Council Offices, Church End, Muenley, N.
" 7	Manchester—Cement	Tramways Committee	J. M. McElroy, 55 Piccadilly, Manchester.
" 8	Cark-in-Cartmel—Church	Trustees	Samuel & Henshaw, Architects, Oxford Chambers, Abbey Road, Barrow.
" 8	Dowlais, Wales—Rebuilding Inn, &c.	—	Tredegan Arms, Dowlais Top, Dowlais.
" 8	Southall, Middlesex—Shed, &c.	Norwood U.D.C.	R. Brown, Surveyor, Public Offices, Southall.
" 8	London, E.C.—Lime, Cement, &c.	Shoreditch Borough Council	H. M. Robinson, Town Clerk, Town Hall, Old Street, E.C.
" 8	Bromley—Refuse Destructor Buildings	Borough Council	Borough Engineer, Municipal Offices, Bromley, Kent.
" 8	Batley, Yorks—Cement	Town Council	O. J. Kirby, Borough Surveyor, Branch Road, Batley.
" 8	Hereford—Tower and Completing Church	—	Austin & Paley, Architects, Lancaster.
" 9	London, E.—Repairs, &c.	—	W. Buck, Surveyor, North Street, Horsham.
" 9	Middlesbrough—Church	—	W. J. Morley, 269 Swan Arcade, Bradford.
" 9	London, S.E.—Cement and Lime	Anerley U.D.C.	Surveyor, Town Hall, Anerley, S.E.
" 9	Beddgelert—Improvements at School	Education Committee	R. L. Jones, County Architect, Beddgelert.
" 9	Catterham, Surrey—Sanitary Annexes	Metropolitan Asylums Board	T. D. Mann, Clerk, Board's Offices, Embankment, E.C.
" 9	Hull—Two Cadmen's Shelters	Corporation	J. H. Hirst, City Architect, Town Hall, Hull.
" 10	Alvaston, near Nantwich—Hospital	Joint Hospital Board	C. E. Davenport, Architect, Nantwich.
" 10	Withington, Lancs—Lime and Cement	Urban District Council	A. H. Mountain, Surveyor, Town Hall, Withington, Manchester.
" 11	Carmarthen—Bridge	Rural District Council	R. Browne, 7 Hall Street, Carmarthen.
" 11	Walton-le-Dale, Lancs—Church Works	—	Vicar, The Vicarage, Walton-le-Dale, Preston.
" 12	Haslingden, Lancs—Cement	Town Council	J. S. Green, Borough Surveyor, Haslingden, Lancs.
" 12	Wrexham-in-Feesdale—Renovation of Chapel	—	Rev. J. Strong, The Manse, Middleton-in-Feesdale.
" 12	Wrexham—Lime	Town Council	Borough Surveyor, Wrexham.
" 14	Romford—Shed	Rural District Council	E. G. Boden, Council's Surveyor, Victoria Chambers, Romford.
" 14	Belfast—Extension of Warehouses, &c.	Great Northern Railway Co. (Ireland).	W. H. Mills, Engineer, Amiens Street Terminus, Dublin.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
BUILDING—cont.			
Mar. 14	Eastbourne—Cement and Bricks	Town Council	D. J. Bowe, Borough Surveyor, Town Hall, Eastbourne.
" 15	Chippenhams—Enlargement of Sorting Office	Commissioners of H.M. Works, &c.	Secretary, H.M. Office of Works, Storey's Gate, London, S.W.
" 15	Rotherham—Alterations to Cookery Centres	Education Committee	J. Platts, Architect, High Street, Rotherham.
" 15	Belfast—Bricks and Lime	Works Committee	Superintendent, Works Office, Townhall Street, Belfast.
" 16	Lichfield—Enlargement of Post Office	Commissioners of H.M. Works, &c.	Secretary, H.M. Office of Works, Storey's Gate, London, S.W.
" 17	Reading—Lime and Cement	Corporation	J. Bowen, Borough Surveyor, Town Hall, Reading.
" 17	London, N.—Sorting Office	Commissioners of H.M. Works, &c.	Secretary, H.M. Office of Works, Storey's Gate, London, S.W.
" 17	Surbiton—Baptist Chapel		A. Mason, Architect, Broughton Chambers, Surbiton.
" 17	Great Float, near Birkenhead—Roof Boarding, &c.	Wallasey U.D.C.	J. H. Crowther, Engineer, Great Float, near Birkenhead.
" 17	Dundalk—Additions to Church		W. H. Byrne & Son, 20 Suffolk Street, Dublin.
" 18	Wimbledon—Cement and Lime	Urban District Council	Surveyor, Council Offices, Wimbledon.
" 18	Branksome, Dorset—Fitting-up Library, &c.		S. J. Newman, Architect, Council Buildings, Branksome.
" 18	Sea View, Isle of Wight—Coastguard Buildings	Admiralty	Superintending Engineer, H. M. Dockyard, Portsmouth.
" 19	Oulton, Lowestoft—Fire-escape Staircases	Guardians	R. S. Cockrill, Architect, Crossley House, Lowestoft.
" 21	Antrim, Ireland—Schools		W. J. Fennell, 2 Wellington Place, Belfast.
" 22	Grangetown, Yorks—Subway, &c.	Eston U.D.C.	C. McDermid, Surv., Council Offices, Grangetown, R.S.O., Yorks.
" 26	Garlands, near Carlisle—Additions to Asylum	Asylum Committee	C. W. A. Hodgson, Clerk, The Courts, Carlisle.
" 31	Carlisle—Bridge, &c.	Rural District Committee	J. Graham, Engineer, Bank Chambers, Bank Street, Carlisle.
ENGINEERING:			
Mar. 3	Cardiff—Reservoir	Corporation	C. H. Priestley, Waterworks Engineer, Town Hall, Cardiff.
" 3	Blaydon-on-Tyne—Footbridge	Urban District Council	G. Syon, Surveyor, Council Offices, Blaydon-on-Tyne.
" 4	Mountain Ash, Wales—Gasholder, &c.	Urban District Council	Corbett, Woodall & Son, Civil Engineers, Palace Chambers, Bridge Street, Westminster, S.W.
" 4	Pontefract—Waterworks	Rural District Council	J. Waugh, Council's Engineer, Sunbridge Chambers, Bradford.
" 5	Kilkeel, Ireland—Repairs to Harbour Basin		J. Heron, County Surveyor, Courthouse, Downpatrick.
" 5	Manchester—Sawdust and Shaving Collecting Plant, &c.	Tramways Committee	J. M. M'Elroy, 55 Piccadilly, Manchester.
" 5	Thame, Oxon.—Well, &c.	Urban District Council	J. Taylor, Sons & S. Crimp, 27 Great George Street, Westminster.
" 5	Coventry—Tramways	New General Traction Co., Ltd.	I. E. Winslow, 30 Bishopsgate Street Within, E.C.
" 5	Kidderminster—Water-supply Works		Willcox & Raikes, Union Chambers, 63 Temple Row, Birmingham.
" 7	Dartford—Heating, &c.	Joint Hospital Committee	R. Mardant, 28 Theobald's Road, London, W.C.
" 7	Birmingham—Electric Power Station	Corporation	J. D. Watson, Engineer, Tyburn, near Birmingham.
" 8	Brigg, Lincs—Lock Gates	Ancholme Drainage and Navigation Commissioners.	A. Atkinson, Commissioners' Engineer, Brigg, Lincs.
" 8	Warminster, Wilts—Reservoir		Willcox & Raikes, 63 Temple Row, Birmingham.
" 8	Caterham, Surrey—Fire Alarms and Telephones	Metropolitan Asylums Board	T. D. Mann, Clerk, Board's Offices, Embankment, E.C.
" 9	London, N.—Electric Light Fittings	Hackney Guardians	F. R. Coles, Clerk, Sidney Road, Homerton, N.E.
" 10	Belfast—Stoves	Gas Committee	Manager, Gasworks, Ormeau Road, Belfast.
" 12	South Shields—Tramways Lease	Corporation	J. M. Hayton, Town Clerk, Court Buildings, South Shields.
" 12	Wrexham—Engine Stores	Town Council	Borough Electrical Engineer, Wrexham.
" 14	Kilmarnock—Electric Plant	Corporation	Kennedy & Jenkin, 17 Victoria Street, S.W.
" 15	Manchester—Boiler	Corporation	City Architect, Town Hall Manchester.
" 15	New Mill, near Huddersfield—Pipelining	Urban District Council	C. H. Marriott, Son & Shaw, Engrs., Church St. Chbrs., Dewsbury.
" 16	Gainsborough—Telephones, &c.	Urban District Council	R. W. Fraser, Electrical Engineer, Council Offices, Gainsborough.
" 17	Great Float, near Birkenhead—Gas Purifiers	Wallasey Urban District Council	I. H. Crowther, Engineer, Great Float, near Birkenhead.
" 17	Christchurch, New Zealand—Electrical Tramways	Government of New Zealand	Agent-General for New Zealand, Victoria Street, London.
" 18	Branksome—Heating Apparatus		S. J. Newman, Architect, Council Buildings, Branksome.
" 18	Kettering—Valves, &c.	Urban District Council	T. R. Smith, Engineer, Market Place, Kettering.
" 21	Portadown and Banbridge, Ireland—Waterworks	Joint Board	W. Wilson, Clerk, Town Hall, Portadown.
" 21	Ilford—Electrical Plant	Urban District Council	J. W. Benton, Clerk, Town Hall, Ilford.
" 22	Grangetown, Yorks—Steel Girder Bridge	Eston Urban District Council	C. McDermid, Surveyor, Council Offices, Grangetown, R.S.O., Yorks.
" 28	Chelmsford—Waterworks	Corporation	C. Brown, 16 London Road, Chelmsford.
April 25	Pietermaritzburg, Natal—Coaling Plant	Government of Natal	Agent-General for Natal, 26 Victoria Street, Westminster, S.W.
IRON AND STEEL:			
Mar. 3	Hipperholme, Yorks—Pipes	Urban District Council	G. W. Thompson, Surveyor, Council Offices, Hipperholme.
" 3	Stockport—Ironmongery	Gas and Electricity Committee	Engineer, Gasworks, Portwood, Stockport.
" 4	Cardiff—Ironmongery	Guardians	A. J. Harris, Clerk, Queen's Chambers, Cardiff.
" 4	Barking, Essex—Ironmongery	Urban District Council	H. Hargreaves, Clerk, Public Offices, Barking, Essex.
" 4	Bristol—Ironmongery, &c.		City Valuer, Council House, Broad Street, Bristol.
" 5	Colchester—Iron and Steel	Roads and Drainage Committee	H. Goodyear, Borough Surveyor, Town Hall, Colchester.
" 5	South Shields—Pipes	Corporation	S. E. Burgess, Borough Surveyor, Chapter Row, South Shields.
" 7	Manchester—Stores	Tramways Committee	J. M. M'Elroy, 55 Piccadilly, Manchester.
" 7	Huddersfield—Pipes	Gas Committee	E. A. Harman, Engineer, Gasworks, Huddersfield.
" 7	London, N.—Ironmongery	Finchley Urban District Council	E. H. Lister, Clerk, Council Offices, Church End, Finchley, N.
" 7	London, S.W.—Steel Sleepers and Keys		Crown Agents for Colonies, Whitehall Gardens, S.W.
" 7	Penzance—Four Galvanized Tanks	Guardians	H. Madder, Architect, Penzance.
" 7	Ilford, Essex—Iron Castings	Urban District Council	H. Shaw, Town Hall, Ilford.
" 7	Newcastle-upon-Tyne—Iron and Steel	Tramways Committee	Tramways Department, Head Office, Manors, Newcastle.
" 7	Mortlake—Ironmongery, &c.	Barnes Urban District Council	G. B. Tomes, Surveyor, Council Offices, High St., Mortlake, S.W.
" 7	London, W.—Tools and Ironmongery	St. Marylebone Borough Council	J. Wilson, Town Clerk, Town Hall, St. Marylebone, W.
" 8	Batley, Yorks—Ironmongery	Town Council	O. J. Kirby, Borough Surveyor, Branch Road, Batley.
" 8	Glasgow—Pipes	Corporation	A. Wilson, 45 John Street, Glasgow.
" 9	London, E.C.—Girder Deck Span	East Indian Railway Co.	C. W. Young, Secretary, Nicholas Lane, London, E.C.
" 9	Tamworth—Ironmongery	Corporation	F. E. G. Bradshaw, 36 Aldergate, Tamworth.
" 12	Wrexham—Stores	Town Council	Borough Electrical Engineer, Wrexham.
" 12	Haslingden, Lancs—Iron Castings	Town Council	J. S. Green, Borough Surveyor, Haslingden, Lancs.
" 14	Eastbourne—Ironmongery	Town Council	D. J. Bowe, Borough Surveyor, Town Hall, Eastbourne.
" 15	Belfast—Iron and Steel	Works Committee	Superintendent of Works, Town Hall Street, Belfast.
" 18	Wimbledon—Tools, &c.	Urban District Council	Engineer, Council Offices, Wimbledon.
PAINTING AND PLUMBING:			
Mar. 4	Cardiff—Oils and Paints	Guardians	A. J. Harris, Clerk, Queen's Chambers, Cardiff.
" 5	Hereford Varnish, Oils and Paints	Roads Committee	City Surveyor, Mansion House, Hereford.
" 5	South Shields Paints and Oils	Corporation	S. E. Burgess, Borough Engineer, Chapter Row, South Shields.
" 7	Dartford—Plumbing Work	Joint Hospitals Committee	R. Mardant, 28 Theobald's Road, London W.C.
" 7	Newcastle-upon-Tyne—Oils, Paints, &c.	Tramways Committee	Tramways Dept., Head Office, Manors, Newcastle-upon-Tyne.
" 7	London, W.—Plumbers' Work	St. Marylebone Borough Council	J. Wilson, Town Clerk, Town Hall, St. Marylebone, W.
" 7	Manchester—Oils	Tramways Committee	J. M. M'Elroy, 55 Piccadilly, Manchester.
" 7	Huddersfield—Paint	Gas Committee	E. A. Harman, Engineer, Gasworks, Huddersfield.
" 8	London, E.C.—Plumber's Work	Shoreditch Borough Council	H. M. Robinson, Town Clerk, Town Hall, Old Street, E.C.
" 9	London, N.—Painting, &c., at Hospitals	Metropolitan Asylums Board	T. D. Mann, Clerk, Board's Offices, Embankment, E.C.
" 12	Wrexham—Oils and Paints	Town Council	Borough Electrical Engineer, Wrexham.
" 12	Haslingden, Lancs—Oils	Town Council	J. S. Green, Borough Surveyor, Haslingden, Lancs.
" 14	Eastbourne—Oils, Colours, &c.	Town Council	D. J. Bowe, Borough Surveyor, Town Hall, Eastbourne.
" 15	Belfast—Paints and Oils	Works Committee	Superintendent of Works, Town Hall Street, Belfast.
" 17	Reading—Oils, Paints, &c.	Corporation	J. Bowen, Borough Surveyor, Town Hall, Reading.
" 18	Wimbledon—Oils and Paints	Urban District Council	Engineer, Council Offices, Wimbledon.
ROADS AND CARTAGE:			
Mar. 3	Lutterworth—Granite, &c.	Monks Kirby R.D.C.	J. B. Holroyd, District Surveyor, Lutterworth.
" 3	Eastbourne—Materials	Rural District Council	T. E. Kirtlan, 92 Terminus Road, Eastbourne.
" 3	Northampton—Granite and Slag	County Council	C. S. Morris, County Surveyor, County Hall, Northampton.
" 4	Surbiton—Dust Removal	Urban District Council	J. Bell, Clerk, Council Offices, Surbiton.
" 4	Barking, Essex—Granite	Urban District Council	H. Hargreaves, Clerk, Public Offices, Barking, Essex.
" 5	Colchester—Materials, &c.	Roads and Drainage Committee	H. Goodyear, Borough Surveyor, Town Hall, Colchester.
" 5	Belper—Material	Rural District Council	R. C. Cordon, Surveyor, Duffield, near Derby.
" 5	Billesdon, Leics—Granite	Rural District Council	W. E. Richardson, 18 New Street, Leicester.
" 5	Erpingham, Norfolk—Materials, &c.	Rural District Council	R. Mann, District Surveyor, Holt.
" 5	Padiham, Lancs—Materials	Urban District Council	J. Gregson, Surveyor, Town Hall, Padiham.
" 5	Ponteland, Northumberland—Road Work and Materials	Castleward R.D.C.	D. Hope, Surveyor, Ponteland.
" 5	Rotherham—Granite, &c.	Rural District Council	R. Bradbury, 298 High Street, Rotherham.
" 5	Thornhill, Yorks—Road Works	Urban District Council	S. W. Parker, Surveyor, Thornhill, Yorks.
" 7	London, N.—Materials	Finchley U.D.C.	E. H. Lister, Clerk, Council Offices, Church End, Finchley, N.
" 7	Manchester—Materials	Tramways Committee	J. M. M'Elroy, 55 Piccadilly, Manchester.
" 7	Bourne, Lincs—Granite and Slag	Urban District Council	S. R. Andrews, Clerk, Bourne, Lincs.
" 7	Bradfield, Berks—Road Repairs	Rural District Council	J. Forrester, District Surveyor, Theale, near Reading.

Complete List of Contracts Open *continued.*

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
ROADS AND CARTAGE—cont.			
Mar. 7	Clown, Chesterfield—Slag	Roads and Drainage Committee	E. H. Barber, Surveyor, Hollin Hill, Clown Hill, Chesterfield.
" 7	Hebburn—Street Works	Urban District Council	H. Paterson, Surveyor, Arzyle Street, Hebburn.
" 7	Holywood, Ireland—Road Works, &c. ..	Urban District Council	J. H. Barret, Clerk, Town Hall, Holywood.
" 7	Southampton—Setts	Corporation	J. A. Crowther, Borough Engineer, Southampton.
" 7	Westhoughton, Lancs—Materials	Urban District Council	T. Partington, Clerk, Westhoughton.
" 7	London, W.—Materials	Metropolitan Borough	J. Wilson, Town Clerk, Town Hall, St. Marylebone, W.
" 7	Mortlake—Granite	Barnes U.D.C.	G. B. Tones, Surveyor, Council Offices, High St. Mortlake, S.W.
" 7	Ilford, Essex—Materials	Urban District Council	H. Shaw, Borough Surveyor, Town Hall, Ilford, Essex.
" 8	Batley, Yorks—Broken Granite	Town Council	O. J. Kirby, Borough Surveyor, Branch Road, Batley.
" 8	Bath—Works and Materials	Urban Sanitary Authority	C. R. Fortune, City Surveyor, Guildhall, Bath.
" 8	London, E.C.—Materials	Shoreditch Borough Council	H. M. Robinson, Town Clerk, Town Hall, Old Street, E.C.
" 8	Abergwyndf, Wales—Street Works ..	Glyncoed U.D.C.	W. P. Jones, Surveyor, Council Offices, Cymmer, Port Talbot.
" 8	Croydon—Roads Repair	Town Council	Borough Road Surveyor, Town Hall, Croydon.
" 8	Faversham, Kent—Flints, &c.	Rural District Council	J. G. Chittenden, District Surveyor, Ashford Road, Faversham.
" 8	Sidcup, Kent—Materials	Foots Cray U.D.C.	W. A. Farnham, Surveyor, Council Offices, High Street, Sidcup.
" 9	London, S.E.—Materials	Anerley U.D.C.	Surveyor, Town Hall, Anerley, S.E.
" 9	Audenshaw, Lancs—Street Improvement Works	Urban District Council	W. Clough, 2 Guide Lane, Audenshaw.
" 9	Bexley Heath, Kent Materials	Urban District Council	W. T. Howse, Surveyor, Council Offices, Bexley Heath, Kent.
" 9	Rishton, Lancs—Road Materials, &c. ..	Urban District Council	J. J. Adams, 4 Church Street, Rishton.
" 9	South Shields—In Situ Concrete to Footways ..	Corporation	S. E. Burgess, Borough Engineer, Chapter Row, South Shields.
" 9	Wardle, Lancs—Works and Materials ..	Urban District Council	T. Burrows, Surveyor, District Council Offices, Wardle.
" 9	Hammersmith—Making-up	Borough Council	Mr. Mair, Borough Surveyor, Town Hall, Broadway, Hammersmith.
" 9	Bingham, Notts—Materials	Rural District Council	R. H. Beaumont, Clerk, Market Place, Bingham.
" 9	Canterbury—Materials	Roads and Survey Committee	A. C. Turley, City Surveyor, Guildhall Street, Canterbury.
" 10	Tadcaster—Materials, &c.	Rural District Council	T. Scott, Council's Surveyor, Aberford, near Leeds.
" 10	Tamworth—Granite	Corporation	F. E. G. Bradshaw, 36 Aldergate, Tamworth.
" 10	Withington, Lancs—Materials	Urban District Council	A. H. Mountain, Surveyor, Town Hall, Withington, Manchester.
" 10	Ealing, W.—Private Street Improvements	Town Council	C. Jones, Borough Engineer, Town Hall, Ealing, W.
" 11	Flaxton, Yorks—Whinstone, &c.	Rural District Council	J. Peters, 4 New Street, York.
" 12	Brathwaite, near Keswick—Widening Road ..	Cockermouth R.D.C.	J. B. Wilson, 11 Main Street, Cockermouth.
" 12	Burnley, Lancs—Materials	Rural District Council	S. Edmondson, 18 Nicholas Street, Burnley.
" 12	Kiveton Park, Sheffield—Slag	Rural District Council	J. P. Evans, Surveyor, Council Offices, Kiveton Park Sta., Sheffield.
" 12	Haslingden, Lancs—Materials	Town Council	J. S. Green, Borough Surveyor, Haslingden, Lancs.
" 12	Wrexham—Materials	County Council	Borough Surveyor, Wrexham.
" 14	Middlesex—Road Widening	Town Council	H. T. Wakelam, County Engr., Middlesex Guildhall, Westminster.
" 14	Eastbourne—Materials	Corporation	D. J. Bowe, Borough Surveyor, Town Hall, Eastbourne.
" 14	Eccles, Lancs—Road Materials, &c. ..	Walton U.D.C.	T. S. Picton, Borough Surveyor, Eccles, Lancs.
" 15	Felixstowe—Concrete Paving	Blyth and Cuckney R.D.C.	J. B. Jennings, Clerk, Town Hall, Felixstowe.
" 15	St. Helen's, Lancs—Road Materials, &c. ..	Rural District Council	G. J. C. Broom, Borough Surveyor, Town Hall, St. Helens, Lancs.
" 15	Workshop—Slag	Corporation	F. Hopkinson, 40 Bridge Street, Worksoo.
" 16	Newbury—Highway Repairs	Urban District Council	H. S. Talbot, District Surveyor, Cold Ash, Newbury.
" 17	Reading—Materials	Urban District Council	J. Bowen, Borough Surveyor, Town Hall, Reading.
" 18	Wimbledon—Granite	Eston U.D.C.	Surveyor, Council Offices, Wimbledon.
" 22	Grangetown, Yorks—Road Works		C. McDermid, District Surveyor, Council Offices, Grangetown R.S.O., Yorks.
SANITARY:			
Mar. 4	Barking, Essex—Disinfectants	Urban District Council	H. Hargreaves, Clerk, Public Offices, Barking, Essex.
" 5	Coulson, Croydon—Scavenging, &c. ..	Croydon R.D.C.	E. J. Gowen, Clerk, Town Hall, Croydon.
" 5	Colchester—Lime	Roads and Drainage Committee	H. Goodyear, Borough Surveyor, Town Hall, Colchester.
" 5	South Shields—Sanitary Pipes	Corporation	S. E. Burgess, Borough Surveyor, Chapter Row, South Shields.
" 5	Hereford—Sewer Pipes	Roads Committee	City Surveyor, Mansion House, Hereford.
" 5	Sanderstead, near Croydon—Removal of Refuse	Parochial Committee	E. J. Gowen, Clerk, Town Hall, Croydon.
" 5	Rotherham—Disinfectants	Rural District Council	B. Hey, 29b High Street, Rotherham.
" 5	Rotherham—Nightsoil Removal	Rural District Council	B. Hey, 29b High Street, Rotherham.
" 7	London, S.E.—Removal of Refuse	Lewisham Borough Council	Surveyor, Town Hall, Lewisham, S.E.
" 7	Manchester—Disinfectants	Tramways Committee	J. M. M'Elroy, 55 Piccadilly, Manchester.
" 7	London, N.—Stoneware Pipes	Finchley U.D.C.	E. H. Lister, Clerk, Council Offices, Church End, Finchley, N.
" 7	Ilford, Essex—Stoneware Pipes	Urban District Council	H. Shaw, Town Hall, Ilford, Essex.
" 7	London, W.—Stoneware Pipes	St. Marylebone Borough Council	J. Wilson, Town Clerk, Town Hall, St. Marylebone, W.
" 8	Bath—Sewer Pipes, &c.	Urban Sanitary Authority	City Surveyor, Town Hall, Bath.
" 8	Batley, Yorks—Drain Pipes	Town Council	O. J. Kirby, Borough Surveyor, Branch Road, Batley.
" 8	London, E.C.—Drain Pipes	Shoreditch Borough Council	H. M. Robinson, Town Clerk, Town Hall, Old Street, E.C.
" 9	London, S.E.—Disinfectants, &c.	Anerley U.D.C.	Surveyor, Town Hall, Anerley, S.E.
" 9	Drighlington, Yorks—Sewers	Urban District Council	J. Waugh, Engineer, Sunbridge Chambers, Bradford.
" 10	Withington, Lancs—Sewerage Pipes ..	Urban District Council	A. H. Mountain, Surveyor, Town Hall, Withington, Manchester.
" 12	Wrexham—Sanitary Materials	Town Council	Borough Surveyor, Wrexham.
" 12	Mitcham—Scavenging, &c.	Parochial Committee	E. J. Gowen, Clerk, District Council Offices, Town Hall, Croydon.
" 12	Haslingden, Lancs—Disinfectants, &c. ..	Town Council	J. S. Green, Borough Surveyor, Haslingden, Lancs.
" 12	Eastbourne—Stoneware Pipes	Town Council	D. J. Bowe, Borough Surveyor, Town Hall, Eastbourne.
" 14	Belfast—Sewer Pipes	Works Committee	Superintendent of Works, Townhall Street, Belfast.
" 15	Reading—Stoneware Pipes	Corporation	J. Bowen, Borough Surveyor, Town Hall, Reading.
" 17	Moss Side, Manchester—Lime Precipitants, &c.	Urban District Council	H. B. Longley, Engineer, Council Offices, Moss Side.
" 18	Tadcaster, Yorks—Sewerage Works	Rural District Council	Martin & Fenwick, Park Place, Leeds.
" 19	Todmorden, Lancs—Sewerage Works ..	Sanitary Committee	Borough Surveyor, Market Ground, Todmorden, Lancs.
" 22	Birkenhead—Sewer	Corporation	C. Brownridge, Borough Surveyor, Town Hall, Birkenhead.
" 29	Twickenham—Refuse Collection	Urban District Council	H. J. Saunders, Clerk, Town Hall, Twickenham.
TIMBER:			
Mar. 3	Runcorn—Timber Wharf	Manchester Ship Canal Co.	W. H. Hunter, 41 Spring Gardens, Manchester.
" 3	Stockport—Timber	Gas and Electricity Committee	Engineer, Gasworks, Portwood, Stockport.
" 4	Bristol—Timber	Roads and Drainage Committee	City Valuer, Council House, Broad Street, Bristol.
" 5	Colchester—Timber	Roads Committee	H. Goodyear, Borough Engineer, Town Hall, Colchester.
" 5	Hereford—Timber	Corporation	City Surveyor, Mansion House, Hereford.
" 5	South Shields—Timber	St. Marylebone Borough Council	S. E. Burgess, Borough Surveyor, Chapter Row, South Shields.
" 7	London, W.—Timber	Urban District Council	J. Wilson, Town Clerk, Town Hall, St. Marylebone, W.
" 7	Ilford, Essex—Timber	Tramways Committee	H. Shaw, Town Hall, Ilford, Essex.
" 7	Manchester—Timber	Shoreditch Borough Council	J. M. M'Elroy, 55 Piccadilly, Manchester.
" 8	London, E.C.—Timber	Town Council	H. M. Robinson, Town Clerk, Town Hall, Old Street, E.C.
" 12	Haslingden, Lancs—Timber	Town Council	J. S. Green, Borough Surveyor, Haslingden, Lancs.
" 14	Eastbourne—Timber	Works Committee	D. J. Bowe, Borough Surveyor, Town Hall, Eastbourne.
" 15	Belfast—Timber	Urban District Council	Superintendent of Works, Townhall Street, Belfast.
" 18	Wimbledon—Timber		Surveyor, Council Offices, Wimbledon.

List of Competitions Open.

DATE OF DELIVERY.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	DEPOSIT REQUIRED FOR CONDITIONS, &c.	BY WHOM ADVERTISED.
Mar. 8	Billerica, Essex—Cottages	£3 5s.	—	C. E. Lewis, Clerk, Union House, Billerica.
" 31	Tipton—Free Library Buildings and Town Hall ..	£50, £20, £10.	£2 2s.	J. W. Waring, Clerk, Public Offices, Owen Street, Tipton.
" 31	St. Helens—Two Branch Public Libraries	£20, £10.	£1 1s.	W. H. Andrew, Town Clerk, Town Hall, St. Helens.
" 31	Vienna—Machinery to Lift Boats on Canal ..	100,000, 75,000 & 50,000 kronen.	—	Austro-Hungarian Consulate-General, 22 Laurence Pountney Lane, E.C.
April 5	Birmingham—Three Public Libraries	£31 10s., £21, £10 10s.	£1 1s.	A. W. Cross, 23 Valatine Road, King's Heath near Birmingham.
" 6	Perth—Hospital	£30, £20, £10.	—	J. Begg, Town Clerk, Perth.
" 8	Malvern—Library	£100, £50, £25.	—	H. L. Whately, Clerk, Council Offices, Malvern.
" 30	Newcastle-upon-Tyne—Grammar School	—	£1 1s.	H. J. Criddle, 2 Collingwood Street, Newcastle-upon-Tyne.
May 9	Barnet—Hospital	—	—	C. D. Byfield, 16 High Street, Barnet.

Builders' Notes.

Barry Carpenters and Joiners have made application for an advance of wages from 8½d. to 9d. per hour. The Barry Master-Builders' Association has refused the advance.

The Nottingham Master-Builders' Association held its annual dinner last week. Mr. F. H. Fish presided. Mr. W. Edgar proposed "The Architects," which was replied to by Messrs. E. R. Sutton and W. C. Hickson.

The Heathcote Hospital at Leamington is being warmed and ventilated by means of Shorland's double-fronted patent Manchester stoves with descending smoke flues, patent Manchester grates and special inlet panels, supplied by Messrs. E. H. Shorland & Brother, of Manchester.

German Competition in the Steel Trade.—At the general meeting of Measures Brothers, Ltd., Mr. R. G. Measures, who presided, having alluded to the resignation of Mr. Richard Isaac Measures from the board, on account of ill-health, said that having regard to the state of the iron and steel trade for the past three years they might congratulate themselves on the result of the twelve months' trading. The amalgamation with the firm of Messrs. H. and G. Measures had been in operation for but a short time. He looked on the company as one that in normal times should pay at least 10 per cent. They had had three almost impossible years, and prices had reached such a level that English works had absolutely stopped making goods rather than go on supplying them at prices 10s. a ton over what they were then paying. One of their German suppliers admitted that on every ton of stuff supplied to them they made a loss, but of course the Germans got the benefit of their export bounty, and moreover charged the home consumer £3 per ton more than the foreigner. Belgian firms had also shut down, and things had reached that pitch where there must be a general shutting down, with consequent decreased supplies, or better prices would have to be obtained. As a fact, a German syndicate had been formed to increase prices, and would probably commence operations by putting up prices 15 to 20 per cent. The report was adopted and a dividend at the rate of 5 per cent. per annum declared.

The new Storm-Water Pumping Station at Chelsea.—Fifty years ago the system of the London main drainage consisted of a series of sewers running roughly at right angles to the Thames and discharging directly into the river. At low water the discharge was effectual, but at higher states of the tide the outward flow was stopped and the sewage was dammed back in the sewers, the flooding of the cellars and basements of houses in low-lying districts being a natural consequence. To remedy this and other evils the present system was designed by Sir Joseph Bazalgette under the Metropolitan Board of Works, his plan being to construct main sewers, approximately parallel with the river, which intercepted the older sewers and relieved them of their contents. Of these intercepting sewers there are three on each side of the river at three different levels; those on the north discharging at Barking, those on the south at Crossness. But while these sewers are capable of dealing with the normal flow, they are inadequate to carry off very excessive rainfall; hence they are provided with storm overflows, through which, when they become surcharged, the storm-water escapes direct to the river. Since, however, many of these overflows have to pass through low-lying districts bordering the river, it is impossible for them fully to discharge their contents except at low tide; so that after a heavy rainfall, if the tide happens to be high (and statistics are said to show that 80 per cent. of heavy rainstorms

in London are synchronous with high tides), they are apt to become surcharged, as in the conditions which prevailed fifty years ago, and then flooding occurs in the houses of the lower district they serve. The new pumping station at Lot's Road, Chelsea, has been erected to prevent this evil, by pumping into the river the water which cannot flow there of itself by gravitation. Gas engines were selected as being most economical in view of the necessarily intermittent character of the pumping, which is expected to be only for about sixty-three hours a year. The total cost of the station has been about £82,000, of which the buildings (erected by the Works Department) accounted for about £50,000, the pumps by Messrs. Easton & Co. for about £6,100, and the engines by Messrs. Crossley Brothers for about £10,300.

Tenders.

Information from accredited sources should be sent to "The Editor" at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Addressed postcards on which lists of tenders may be stated will be sent post free on application to the Manager, BUILDERS' JOURNAL, 6, Great New Street, Fetter Lane, E.C.

Bedford.—For additions to schools, for the Bedford Borough Education Committee. Mr. Henry Young, architect, Maitland Street, Midland Road, Bedford:—
C. E. Haynes, Kempston, Beds .. £1,562
Litchfield & Son .. 1,950
Brown & Son, Wellingborough .. 1,906
R. Jeakings .. 1,876
G. Harrison .. 1,873
E. Casbeard .. 1,869
J. Potter .. 1,866
A. Ibbott .. 1,846
C. Negus .. 1,845
Corby & Son .. 1,802
Melcombe Brothers .. 1,763
E. Dawes .. 1,745
Warton & Dunstall .. 1,708
Mann & Son, Amptill, Beds .. 1,700
C. Kilpin .. 1,683
S. Foster, Kempston* .. 1,672
A. E. Pryor .. 1,537

* Accepted subject to the approval of the Education Department. [Rest of Bedford.]

Belfast.—For the erection of an extension of the present goods shed on the west side of the York Dock, co. Antrim, for the Belfast Harbour Commissioners. Mr. G. F. L. Giles, engineer:—
J. & W. Stewart, Belfast .. £3,128 10 0
Bruce & Steel, Liverpool .. 3,062 5 3
W. Bain & Co., Coatbridge .. 2,646 16 9
J. Henry & Sons, Belfast .. 2,598 5 4
J. Lysaght & Sons, Bristol .. 2,585 15 3
W. J. Campbell & Son, Belfast .. 2,440 0 0
H. & J. Martin,* Ltd., Ormeau Road, Belfast .. 2,230 0 0

* Accepted.

Boston (Lines).—Accepted for the erection of a science school at the Grammar School, Boston. Mr. James Rowell, architect, Boston:—
H. W. Parker & Son, Boston .. £1,218
[Lowest of seven tenders received.]

Brighton.—For the construction and completion of (1) ten double-tenement dwellings and (2) eight shops and houses on the Spa Street area, Brighton:—

Contract No. 1.

Box & Turner, Ardingly .. £6,313
H. J. Penfold, 219, Preston Road .. 5,797
J. Barnes, 99 and 100, North Street .. 5,640
R. Cook & Sons, Crawley .. 5,600
W. Taylor, 44, Mighell Street .. 5,567
Sattin & Evershed, Freshfield Road .. 4,890
J. & W. Simmonds,* Ashford Road .. 4,575
H. A. Caxton Jay, 21, Conway Street, Hove 3,990

Contract No. 2.

Box & Turner .. 7,720
J. Barnes .. 7,120
H. J. Penfold .. 6,897
R. Cook & Sons .. 6,800
W. Taylor .. 6,786
J. & W. Simmonds .. 6,152
Sattin & Evershed* .. 5,955

* Accepted. [Rest of Brighton.]

Cheltenham.—Accepted for the erection of a small house at Cleeve Hill, near Cheltenham. Mr. Thomas Malvern, architect and surveyor, 21, Winchcombe Street, Cheltenham:—
A. Jend, Cleeve Hill .. £380

Cheltenham.—Accepted for the erection of a bungalow at Cleeve Hill, near Cheltenham. Mr. Thomas Malvern, architect and surveyor, 21, Winchcombe Street, Cheltenham:—
F. J. Green, Winchcombe .. £340

Cwm (near Ebbw Vale, Mon.).—For the erection of five houses and shops at Cwm, near Ebbw Vale. Mr. Ernest N. Johnson, architect, Risca:—
Lattey & Co., Ltd., Cardiff .. £2,647 13 2
J. Charles, Newport .. 2,570 0 0
C. H. Reed, Newport .. 2,322 0 0
Williams & Rogers,* Cwm .. 1,994 15 0

* Accepted.

Ipswich.—For proposed residence, Henley Road.

Mr. Lordon, architect:—
G. Grimwood & Sons .. £1,143
C. Roper .. 1,136
H. J. Linzell .. 1,097
A. Sadler .. 1,080
E. Catchpole* .. 1,077

* Accepted.

London.—For the erection of three brick structures, for temporary school accommodation in the first instance, on the Hearnville Road site, Balham, for the London School Board. Mr. T. J. Bailey, Board's architect:—

Holloway Brothers, Ltd. .. £5,207
W. Akers & Co. .. 5,187
E. P. Bulled & Co. .. 5,075
General Builders, Ltd. .. 4,995
Spencer, Santo & Co., Ltd. .. 4,984
T. D. Leng .. 4,975
J. Carmichael .. 4,962
Rice & Son .. 4,958
Lathey Brothers .. 4,953
J. Garrett & Son .. 4,880
W. Johnson & Co., Ltd. .. 4,850
Martin, Wells & Co., Ltd. .. 4,824
Stimpson & Co. .. 4,795
Edwards & Medway .. 4,792
E. Triggs* .. 4,697
J. Appleby & Sons† .. 4,230

* Recommended for acceptance. This amount is inclusive of the sum of £125 for extra for glazed brick internal facings. † Withdrawn.

London.—For halls and other improvements at Buckingham Terrace School, North Kensington, for the London School Board. Mr. T. J. Bailey, Board's architect:—

Stimpson & Co. .. £6,264 0 0
Stevens Brothers .. 5,956 0 0
General Builders, Ltd. .. 5,928 0 0
Marchant & Hirst .. 5,680 0 0
H. Wall & Co. .. 5,585 0 0
J. Simpson & Son .. 5,542 0 9
Lathey Brothers .. 5,333 0 0
Leslie & Co., Ltd. .. 5,204 2 6
Treasure & Son .. 5,117 0 0
E. Triggs .. 5,067 0 0

* Recommended for acceptance.

London.—For enlargement and improvement of boys' and girls' school, Sydenham Hill Road, for the London School Board. Mr. T. J. Bailey, Board's architect:—

F. & H. F. Higgs .. £11,999
G. E. Wallis & Sons .. 11,344
General Builders, Ltd. .. 11,341
E. Lawrence & Sons .. 11,030
Patman & Fotheringham, Ltd. .. 10,985
Lathey Brothers .. 10,933
W. J. Mitchell & Son .. 10,928
J. Appleby & Sons .. 10,850
J. Garrett & Son* .. 10,663
Martin, Wells & Co., Ltd. .. 10,648
J. Smith & Sons, Ltd. .. 10,464
J. & C. Bowyer* .. 10,357

* Recommended for acceptance.

London, E.—For the erection of the depot, Digby Street, Green Street, Bethnal Green, of (1) stabling, (2) disinfecting station, for the Bethnal Green Borough Council. Mr. R. Stephen Ayling, F.R.I.B.A., architect, 23, Old Queen Street, Westminster, S.W. Quantities by Mr. H. Riley, 23, Victoria Street, Westminster, S.W.:—

	Stables.	Station.
W. Thomerson & Son ..	£8,550	£3,400
G. Wiles & Co., Ltd. ..	8,340	3,612
W. Mills ..	8,018	3,097
J. Haydon & Sons ..	7,879	3,071
F. & F. J. Wood ..	7,640	3,043
R. A. Lowe ..	7,623	2,999
E. Brown & Son ..	7,497	3,095
F. Willmott ..	7,149	2,995
Wilkinson Brothers ..	7,448	3,052
A. Monk ..	7,398	2,993
R. & E. Evans ..	7,356	2,915
F. & H. F. Higgs ..	7,350	2,975
C. Yates & Co. ..	7,323	2,978
L. Whitehead & Co., Ltd. ..	7,310	2,943
Terry Building Co. ..	7,300	3,000
T. Almond & Son ..	7,300	2,998
C. North ..	7,283	2,979
Sheffield Brothers ..	7,277	2,993
H. Kent ..	7,275	2,879
H. L. Holloway ..	7,184	2,842
J. Shillitoe & Son ..	7,150	2,850
F. Gough & Co. ..	7,094	2,890
J. Ferguson & Co. ..	7,090	2,838
B. E. Nightingale ..	6,989	2,784
Foster Brothers ..	6,988	2,837
W. Lawrence & Son ..	6,984	2,894
J. Dolman & Co. ..	6,983	2,726
S. E. Moss ..	6,950	3,000
Knight & Son ..	6,927	2,762
J. Appleby & Sons* ..	6,730	2,720
S. Kind ..	—	3,500
W. G. Brown ..	—	2,926

* Accepted.

Purley.—For building two houses in Brighton Road, Purley. Mr. Frank Windsor, architect:—

Akers & Co. .. £1,897
D. Waller .. 1,700
E. J. Saunders .. 1,680
Pearson & Co.* .. 1,470

* Accepted.

Winkfield (Windsor).—For alterations and additions to Forest Farm, for the Duke of Newcastle. Plans prepared in the Newcastle Estate Office:—

Hollis & Sons .. £6,549
B. E. Nightingale .. 6,140
Holloway Brothers, Ltd. .. 5,950
G. Brown .. 5,200
W. Watson,* Ascot .. 5,190

* Accepted.

Advertising Notes.

There are two kinds of advertisements—those that have something to say, and those that have to say something. Have something to say: say it: and stop when you've done.

Appointments Wanted.

The charge for Advertisements under this heading is 1s. 6d. per insertion not exceeding four lines, and 6d. per line afterward, prepaid. Three insertions may be had for the price of two. Advertisements must reach the Office not later than 5 o'clock on Monday.

ARCHITECT & SURVEYOR'S ASSISTANT requires appointment; neat draughtsman, designs from sketches, details, specification, field surveying, levelling, and office routine.—Box 233, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

ARCHITECT & SURVEYOR'S Junior ASSISTANT seeks re-engagement. Experience in planning, details, designs from sketches, perspectives, quantities, levelling and surveying, neat draughtsman; Prob. R.I.B.A.; mod. salary.—Address, W. HELM, Victoria Road, Woolston, Hants. 214

ARCHITECT and SURVEYOR'S Junior ASSISTANT, age 22; drawings, details, surveying, &c., good references.—Box 246, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

ARCHITECT'S ASSISTANT (24) desires Re-engagement. Working drawings, details, specifications, &c. City and provincial experience. Moderate salary.—S. H. J. MURCH, "Oakhurst," Loughton, Essex. 239

ARCHITECT'S ASSISTANT. Details. Thorough knowledge quantities and fair draughtsman. Five years' experience. Salary 30s.—Address ASSISTANT, Elizabeth Lodge, Crescent Road, South Woodford, Essex. 247

ARCHITECT'S ASSISTANT disengaged, well up in Board School design, specifications and quantities; temporary work not objected to.—Apply Box 245, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

ARCHITECT'S ASSISTANT with small country practice, requires work in London Office for three days a week. 6½ years good, varied country experience. Moderate salary.—E. J. G., 19, High Street, Chesham. 207

ARCHITECT'S, SURVEYOR'S or CIVIL ENGINEER'S ASSISTANT desires appointment, six years' experience in land and marine surveying, boring operations, details, plans, levelling and drawings. Moderate salary.—F. PREVATT, 27, Grange Road, Canonbury, N. 248

BUILDER'S ASSISTANT (disengaged), 10 years' experience, prime costs, ledgers, accounts, general supervision and other office routine, excellent references, age 27.—P., 18, Kennington Park Rd., S.E. 242

BUILDER'S CLERK, aged 18½, 4 years experience; office routine and correspondence, can super and cube, and assist in measuring up, wages 2s. 6d.—Box 235, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

BUILDER'S CLERK (24) requires Engagement, well up in estimating, measuring, variations, and general routine; 10 years' experience with large London builders.—G. H., 33, Englefield Rd., Islington. 236

BUILDER'S CLERK (24) disengaged requires situation, well up in prime cost and jobbing works; 9 years' experience; good references.—Apply E. P., 284, Hoxton Street, N. 237

BRICKLAYER FOREMAN, just completing large job in London, seeks RE-ENGAGEMENT. Experienced in large jobs; well up in drawings; with good references.—C. R., 89, Carlton Vale, Kilburn, N.W. 212

BUILDER'S FOREMAN (General), trade bricklayer. Practical in alterations, sanitary work, &c. First-class reference. Just finished up job.—Address SIMPSON, Paragon Place, Surbiton Hill, S.W. 219

CLERK OF WORKS seeks re-engagement, whole or part time, good references and testimonials.—Apply H. E. C., 15, Maclise Road, West Kensington Park. 211

CLERK seeks appointment in Builder's office. Used to correspondence, tracing, and general office routine.—Box 210, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

CONTRACTOR'S QUANTITY CLERK, capable and practical, 11 years' experience, taking off plans, details, setting out, supervision, adjusting variations, accounts, general routine; low salary.—OLIVER, 3, Station Road, Kensal Rise. 226

DRAUGHTSMAN and SURVEYOR (27), varied ex., good designer, working details, spec., take out quantities, experience in shop fitting, good surveyor and leveller, moderate s.—B., Waterworks, Malden, Essex. 241

ESTIMATING.—An experienced Builder's Estimator will be pleased to price Bills of Quantities for Builders, moderate charges.—Apply, T. G. P., Box 232, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

GENERAL FOREMAN wants job, energetic, practical, and experienced, genuine references, 10 years with last employer; would manage an estate.—Box 225, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

GENERAL or Working Foreman disengaged, Carpenter and Joiner by Trade; good manager of men. Good references from late employer.—W. B., 79, St. Albans Avenue, Bedford Park, S.W. 251

GENTLEMAN (21) seeks ENGAGEMENT as ASSISTANT SURVEYOR. Good draughtsman, knowledge of Architecture. Excellent testimonials. Small salary. Surrey or Sussex preferred.—Apply, ROWSON, Wavertree, Horley, Surrey. 227

HANDY-MAN wants re-employment in Factory, Warehouse, or Estate, well up in all kinds of general house repairs; good references; own tools.—W. H., 36, Priory Road, South Tottenham. 185

HOUSE DECORATING and REPAIRS. Surveyors' Dilapidation Work estimated for every moderate charges.—12, Choumert, Grove, Peckham.

JUNIOR ASSISTANT (Student R.I.B.A.) requires ENGAGEMENT. Neat Draughtsman, working drawings, details, surveying, levelling, and usual office routine. Excellent references. Moderate salary.—H. W. HUMPHRY, 49, Poole Road, Bournemouth West. 216

JOINERS' FOREMAN and MACHINIST, 15 years with last employer; good references; reasons given for being out; country.—A. G. COOPER, Bridge House, Booking Church Street, Braintree. 234

JOINER wants job, young. Experience in machine shop. Town or country.—Apply G. W. S., Crabtree House, Lower Beeding, Horsham, Sussex. 238

JUNIOR CLERK wants SITUATION in builder's office. Age 19. Understands general office routine.—Apply, LOCKWOOD, "Llanberis," Westgate-on-Sea. 181

MACHINIST (all-round hand) seeks situation on spindle, French, or block four-cutter, and others if required. Thoroughly experienced in making cutters and sharpening saws.—Address, MACHINIST, 78, Ifield Road, West Brompton. 218

PAINTER and PAPERHANGER (good) wants CONSTANCY. Good colourman, and able to take charge.—Apply W. B., 22, Albert Road, Henley-on-Thames. 230

PLUMBER, GAS, and HOT WATER FITTER, well up in all branches, also zinc work London and country experience; references.—E. G., 76, Wharton Road, West Kensington Park, W. 249

PLUMBER, PAINTER, PAPERHANGER. Lead or Sash Glazier seeks Situation as Constancy, also Mate.—Apply J. HURST, Skelmorlie, Abinger Common, Dorking. 244

PLUMBER (Registered), Experienced all round man seeks engagement. Turn to glazing, painting, paper-hanging, &c. Good country shop preferred. Highest references.—STALEY, 75, Clapton Road, Stratford-on-Avon. 206

PLUMBING WORK WANTED (first-class). Labour and solder only. Town or country.—PALMER, 15, Robert Street, Hampstead Road. 229

QUANTITY SURVEYOR'S ASSISTANT (30), taking-off, working up, specifications, variation accounts, &c., accurate and reliable, desires permanent or temporary engagement. Terms moderate.—Box 231, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

QUANTITY SURVEYOR, fully qualified, open to prepare quantities and adjust variations, &c., with accuracy and despatch at own office, full responsibility, references, charges moderate by arrangement.—Box 224, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

QUANTITY SURVEYOR'S JUNIOR ASSISTANT wants immediate Engagement. Abstracting, billing, and assist in taking off. Good references.—THOMAS, Castle Street, Usk.

TO ARCHITECTS, BUILDERS, and PROPERTY OWNERS.—Wanted, Painting and Decorating Contracts. Any amount. Own plant. Distance no object. General repairs also undertaken.—Write to HARRY B. WRAY, 1, Venetia Rd., Finsbury Park, N. 252

TO BUILDERS and SPECULATORS. Wanted Joinery, Carcassing Stairs (Piecework). Any quantity. Lowest prices. Any distance.—REID, 91, Mill Hill Road, Acton, W. 189

TO BUILDERS or JOINERY WORKS. Foreman of Joiners and Machinists wants change, suburbs or S.E. coast; 16 years' experience; good references; up-to-date method of preparing joinery at competitive prices; thoroughly practical.—Box 183, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

TO FOREMEN or MASTER BRICKLAYERS.—Young Man, energetic, been four years at trade, desires situation on a good brickwork job.—For terms, address A. G., 119, Liverpool Road, Canning Town. 184

TO LARGE EMPLOYERS of LABOUR. THE NATIONAL ASSOCIATION for RESERVE SOLDIERS, 119, Victoria Street, S.W., tel. 367, Westminster, telegrams, "Employoos," London, supplies men of good character only, as Porters, Labourers, Caretakers, Carmen, Night Watchmen, Timekeepers, Carpenters, Masons, Bricklayers, Navvies, Handy Men, &c. Characters up to date. No fees.—Apply SECRETARY, as above.

WORKING FOREMAN wants Job, Shop or outside buildings, steady and reliable; good references.—H. H., 7, Park Grove, Bromley, Kent. 250

Appointments Vacant.

ARCHITECTURAL ASSISTANT required immediately for a period of about three months; must be well up in structural details. State age, experience, and salary required.—Applications to THOMAS MOULDING, A.M.Inst.C.E., City Engineer and Surveyor, Municipal Offices, Exeter.

BUILDER, recently returned from West Africa, desires an architect or builders' merchant as partner, both to proceed shortly to West Africa; advertiser has extensive knowledge of the country. Capital required, £500, to undertake contracts for building and engineering work. Certain and large profits available in the immediate future.—Address Box 221, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

MACHINIST JOINER wanted by a Lancashire firm of Contractors able to take charge of various Machines and other Machinists. State wages and experience to Box 240, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

PUPIL. Old-established Brighton Architect being also Town Surveyor has a vacancy. Premium required.—Box 213, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

WANTED. Temporary assistance, abstracting and billing, in London Surveyor's office. State qualifications and salary required.—Box 220, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

WORKING PARTNER WANTED.—Experience with small capital in House Decorator and Contractor's Business. Established 30 years South London.—Apply Box 201, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

Drawings, Tracings &c.

DESIGNER.—Young LADY (four years' training) REQUIRES EMPLOYMENT as DESIGNER, Wallpapers, Cretonnes, &c. Specimens submitted.—BROMHALL, 158, Richmond Road, Dalston. 186

DESIGNER and DRAUGHTSMAN with thorough practical knowledge of Composition, Carton Pierre and Fibrous Plaster Decorations, also woodwork in all its branches, with estimates, desires a permanent engagement.—Box 194, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

DRAUGHTSMAN will ASSIST Architects, Surveyors, or Builders, in preparing plans, working drawings, details, tracings, perspectives, specifications and quantities taken off; reasonable terms.—HENRY PHILLIPS, Cotingham, Hull. 198

DRAUGHTSMAN, 6 years' experience. Desires evening work. Perspectives, inking-in Architect's drawings, and tracings.—P. R. WALKER, 71, Aytoun Road, Brixton, S.W. 203

JUNIOR DRAUGHTSMAN, 21, desires further experience. Three years with Borough Surveyor and Architect. Knowledge of Road Surveying; good Tracer and Draughtsman. Excellent references. Moderate salary.—Box 192, BUILDERS' JOURNAL Office, Great New Street, E.C.

TRACINGS of every description by first-class tracer; evening work only.—R. L. SIVYER, 20, Cowley Street, Westminster, S.W. 217

THE BUILDERS' JOURNAL

AND ARCHITECTURAL RECORD.

March 9, 1904. Vol. 19, No. 474

6, Great New Street, Fetter Lane, E.C.

Summary.

Dr. Murray, of the British Museum, died last Saturday. (Page 117.)

Mr. John W. Simpson reminded his hearers at last week's meeting of the Architectural Association that "National" and "British" schools were erected by two societies founded respectively by Dr. Bell and Joseph Lancaster. They were the first to be planned on a scientific basis of relation between the system of teaching and the building. Later (about 1826) came the system of Mr. David Stow, the outcome of "pupil teachers." Then when School Boards were established an enquiry into Continental plans was made, and finally the combined "classroom" and "pupil-teacher" system was evolved, the first school being built in Jonson Street, Stepney, from designs by the late Mr. T. Roger Smith. (Page 113.)

In his lecture on the mediæval workman, at the Carpenters' Hall, Mr. C. R. Ashbee said that life in the Middle Ages was first aristocratic, then religious, and thirdly æsthetic. The builder's art was the great occupation and the Church was the great profession. At that time the whole population of England was less than that of London to-day. Among the workmen there was no fight for subsistence, no struggle against time. (Page 122.)

Models, plans and designs of public works are included in the British exhibit for the St. Louis Exhibition. The most interesting model is that of the Assuan Dam. (Page 120.)

The opinion was generally expressed at the second annual meeting of the Building By-laws Reform Association that people should be allowed to erect property on their own estates without the interference of hard-and-fast by-laws, more especially in regard to labourers' cottages. (Page 121.)

In London about 1776 wages averaged 3d. per hour for skilled workmen and 2d. for labourers; which contrasts strangely with present-day rates of 10½d. to 11d. per hour for skilled labour and 7d. per hour for labourers. The difference in the average cost of building materials is not so striking: the present prime-cost rates of 34s. per thousand for common stocks, lime at 10s. 6d. per hundred, fir timber at 2s. per ft. cube, &c., do not compare unfavourably with the rates current in 1776 when the difference in the value of money is taken into consideration. (Page 118.)

Royal Academy Exhibition, 1904.

THE sending-in day for architectural works at this year's Royal Academy Exhibition is Friday, March 25th. As in previous years, we shall be pleased to deliver any works free of charge, provided they are sent to our offices, 6, Great New Street, Fetter Lane, not later than 2 p.m. on the above date, and to make reproductions of such as we wish. We would once more urge upon architects the desirability of sending their frames as early as possible.

Rutland Square, Dublin. WE are glad to see that considerable protest is being made in Dublin

against the proposal to erect a new technical school on the east side of Rutland Square. There seems to be no adequate reason why so dignified a place should be disturbed with a building such as that proposed. A writer in the "Irish Times" who champions the Governors of the school is very plausible in his arguments, but they are based on the false assumption that the school, on account of its importance, must necessarily be in a leading thoroughfare. This is nonsense. It matters not a jot if the school is in a side street. Of course, if a good site in an important thoroughfare were available it would be well; but in Dublin this is not the case. There are, however, several other excellent sites, so that it is sheer vandalism to talk about building the school in Rutland Square. The kind of building which is popularly spoken of as "an ornament to the city" is generally about as bad as it can be, and the erection of such a building in this fine old square in Dublin would be a gross blunder.

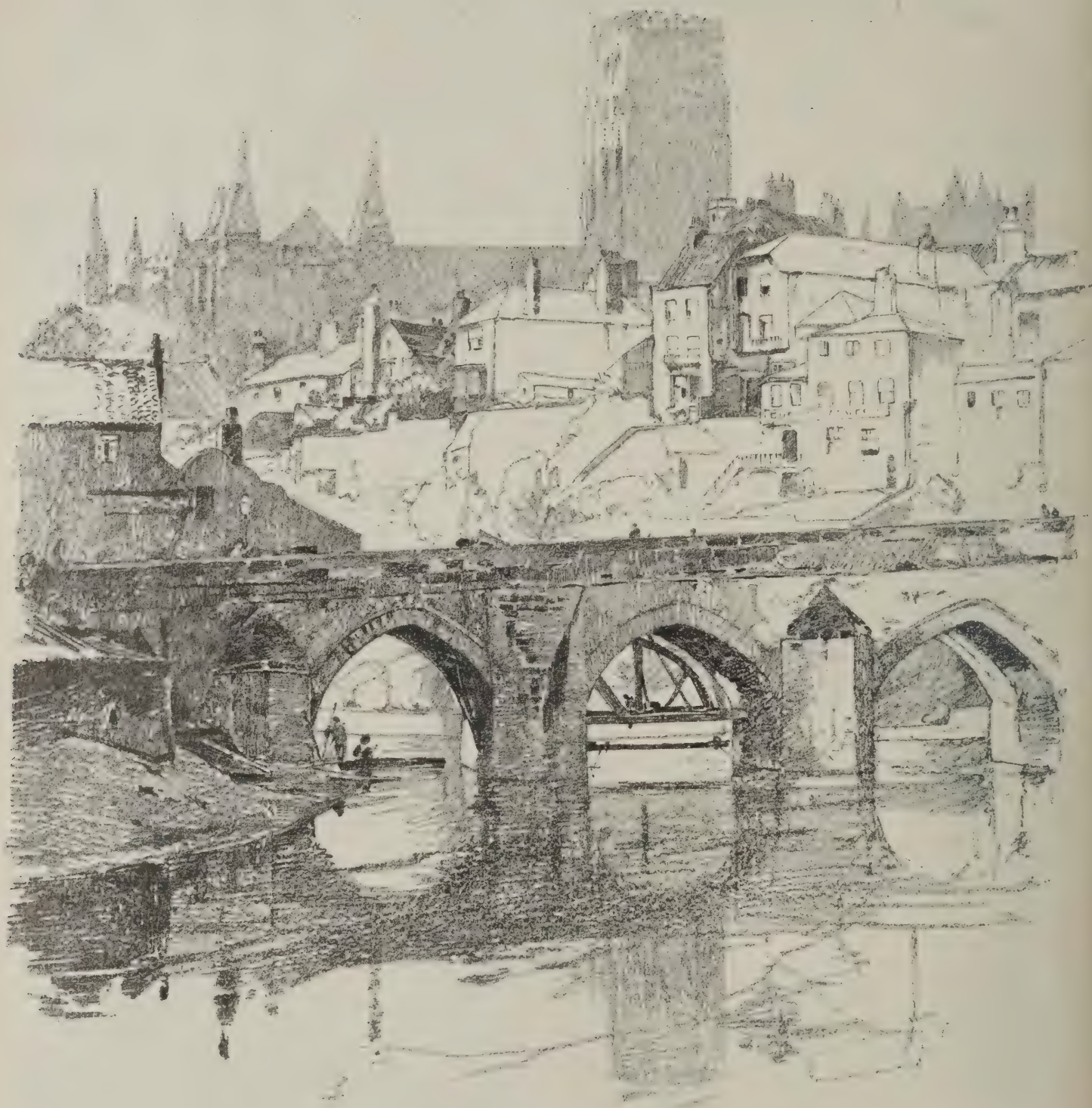
Another Competition Trouble.

FROM the honorary secretaries of the Birmingham Architectural Association we receive a copy of the letter which they have sent to the borough surveyor of Erdington in reference to the competition for free library and municipal buildings in that town. In it they express the regret of their Association that the assessor's award is proposed to be set aside and the author of the third-premiated design appointed to carry out the work. We need hardly say that this would be most reprehensible, more especially as clause 4 of the conditions issued to competitors stated that the work would be given to the author of the first-premiated design. It is perhaps too much to hope, but we trust the urban district council will reconsider their intention and not add one more to the list of ill-managed competitions. Very grave objections should be possible before an assessor's award is thrown aside: in this case there are no such objections, as the design placed first well merited its position. In regard to this matter it is opportune to remind architects of the new clause which has just been added to the R.I.B.A. "Suggestions for the Conduct of Architectural Competitions." After stating that the author of the design placed first should be employed to carry out the work, and be paid according to the Institute schedule, the clause runs: "If no instructions are given to him to proceed within twelve months from the date of selection, or if the

proposed works are abandoned by the promoters, then the selected architect should receive payment for his services in connection with the preparation of the competition drawings of a sum equal to 1½ per cent. on the amount of the estimated expenditure."

No By-laws. THE second annual general meeting of the Building By-laws Reform Association was not altogether a happy one: but we leave that matter for perusal on p. 121 of this issue. The point we wish to refer to concerns the necessity of having by-laws at all for rural districts. Really some of the speakers at the meeting reminded one of Hyde Park ranters in their antagonism for all restrictions by authorities. One gentleman observed that the best building by-laws were no by-laws at all; another that a landowner should be allowed to build as he liked on his own estate; another that no by-laws should be enforced when an architect was looking after the building—as if that was a guarantee of its perfection! No one with any knowledge of the subject can be unaware that some by-laws do impose onerous restrictions on the building of houses for the country labourer, but we cannot leave him to the mercy even of landowners in the twentieth century. It is quite possible to make a slum of a house in the middle of a field, and if there were no authority to insist on certain necessary requirements, things would not be likely to mend. As Mr. Willink remarked at the meeting, one aspect of the question concerns the medical officer of health, who relies very much on the strict administration of the by-laws for the protection of small cottagers.

The Tariff Commission. THE Tariff Commission send us the first of their papers, relating to the iron and steel trades. We gather from these how much the industry has increased in Germany and the United States, but the figures are general and have no particular relation to building. The papers show how the Commission is prosecuting its enquiry. There are three main divisions, namely (1) the analysis of official returns bearing upon the conditions of industry here and in other countries; (2) the issue of forms of enquiry to the various trades, to elicit information; (3) the examination of representative witnesses from each leading trade with a view of testing the accuracy of the conclusions indicated by the two foregoing methods. As regards (3), witnesses are selected solely with a view to their representative character, and the opinions they may hold upon the fiscal question are in no way considered.



Old Bridge Durham

Oliver Hall.

DRAWINGS OF ARCHITECTURE.

THIS week we add Mr. Oliver Hall to our list. His pencil drawings of architecture are among the most delightful we know and we are glad to be able to publish two such fine examples as that reproduced on the opposite page and the lithograph of the old houses on Durham Bridge given in our centre plates. In these drawings there is both a strength and a lightness of touch that pronounce at once a master-hand; as, for instance, in the strong unhesitating treatment of the old bridge, the outline rendering of the houses above, with here and there some concentration as relief, and above all the great mass of the cathedral towering beyond. In everything, too, there is a fine sense of composition. With a drawing such as this it is perhaps more essential to know what to leave out than what to put in; an artist may still "draw the thing as he sees it" and his work on paper may give one the true impression without in any degree approaching a photographic completeness. Mr. Hall's beautiful drawings show this to be so.

ARCHITECTURAL ASSOCIATION.

A MEETING of the Architectural Association was held on Friday evening last at 9, Conduit Street, W., the chair being occupied by the president, Mr. Henry T. Hare, F.R.I.B.A.

A special meeting had been held to consider whether the majority of members would find it more convenient to hold the meetings on some other evening than Friday. Mr. Hare thought that in view of the fact that many persons went away for week-ends and that the middle of the week was not convenient, the best day would be Monday, the day on which the Royal Institute of British Architects held their meetings, of course arranging them alternate weeks with that body. The majority of members present expressing the same view, it was decided to ask the whole of the members to vote for either Monday or Friday. The following were then elected members:—Messrs. J. F. Blakiston, E. H. Gandy and J. W. Fair. Mr. Hare announced the following further donations to the New Premises Fund:—

	£	s.	d.
W. F. Glover - - - - -	10	10	0
F. L. Pearson - - - - -	13	10	0
W. F. Walker - - - - -	5	5	0
H. V. Shepbear - - - - -	2	2	0
S. Box - - - - -	1	1	0

The House List of nominations for officers during the next session was announced. As the nominations for the Committee are generally added to later, we need only mention that Mr. E. Guy Dawber is proposed as president and Messrs Arthur T. Bolton and J. S. Gibson as vice-presidents.

Mr. John W. Simpson, F.R.I.B.A., then read a paper on "Schools."

Mr. Simpson dealt first with the provisions for education before the Act of 1870, recalling Charles Lamb's "Recollections of Christ's Hospital" with its "little square Bedlam cells, where a boy could just lie at his length upon straw and a blanket," and the type represented by Mr. Wackford Squeers at Dotheboys Hall.

Proceeding, Mr. Simpson said:—In your sketching expeditions through country districts you have no doubt come across little single-storey brick buildings of hideous design garnished with cement travesties of Gothic gables and windows. Over the doorway is the inscription "National School" or "British School." It is a safe wager that if you stop and question the first six architects cycling by on their quest of tit-bits to

measure, no one of them will be able to interpret to you the signification of those legends. Yet it is from these buildings that the modern type of elementary school has been developed. They were erected by two societies, the "National Society," founded by Dr. Andrew Bell, and the "British and Foreign Society," by Joseph Lancaster. The first Lancasterian school was opened in 1798, the National Schools dating from somewhat earlier. They were at first mainly supported by private subscriptions, and the term "Charity School" grew to be a more or less invidious epithet of distinction from the richer "Grammar School."

The Bell and Lancaster elementary schools

were the first to be planned on a scientific basis of relation between the system of teaching and the building. The method was, shortly, as follows:—One master had the entire control of the school. The number of scholars was unlimited; Lancaster is reported to have said that he would not hesitate to place as many as 1,000 under a single master in one room, though it is not reported that he ever actually did so. The building consisted merely of one room, of oblong form, and of suitable size for the number it had to hold. The master's desk was upon a raised platform at one end, and the scholars sat facing him at long desks placed transversely to the long axis. On each side of the desks, and the whole length of the room, was an alley or gangway 5ft. or 6ft. wide. The floor was inclined from the master's desk to the further end, where the highest class was placed. The whole school was divided into small classes according to attainments, the feature of the system being that every class was taught by other scholars, who had themselves reached a slightly greater degree of proficiency than those they taught. These "monitors," as they were called, occupied the side gangways already referred to, and formed their little classes into semicircles for reading and so on. No special arrangements were insisted on as to lighting, the windows being generally at both ends and on one side. The system of monitors became discredited as matters advanced, and their place was taken, about 1826, by "pupil teachers," under the development of the methods of Mr. David Stow, of Glasgow.

The school-house plan was modified under

The "Stow" System,

but the principle of immediate supervision by the master remained. The schoolroom was still the simple oblong plan, though as much as 28ft. or 30ft. in width. A very large stepped gallery occupied the end furthest from the door, capable of seating quite two-thirds of the pupils. This was used for collective lessons, and, the buildings being designed in most cases for use also as Sunday schools, was considered of great importance, not only for efficient supervision but as being well suited to the purposes of religious instruction. A row of long desks was placed against each of the side walls, for writing lessons, and one or two separate classrooms were provided at the end of the room opposite the gallery, each with its own gallery.

The "pupil teacher" system proved successful, and the plan, with minor modifications, remained pretty much on these lines until the Committee of Council on Education began to organize matters about 1840 and onwards.

In the early schools, you will observe, simultaneous teaching was the aim of the plan; now as pupil teachers became fairly efficient they were found capable of instructing separate classes with advantage, though, being young, they required supervision at their work and the help of the master's authority. Therefore, note how the problem had varied its conditions. What was now wanted was a series of classes, all separately

taught, yet all under one controlling eye. The Gallery and Lancaster plans, where the seats were placed at right angles to the long axis of the room, were no longer suitable. The reason for their compact grouping had disappeared, and they did not permit classes to be effectively isolated one from another. Accordingly the seats, instead of being placed at right angles to the long axis, were now put parallel thereto, and about three rows deep of desks only used, so that a young teacher's voice might easily reach the scholars. As it was clearly inadvisable to have classes seated face to face, they were placed side by side; the rooms were reduced in width, leaving room only for the class to be called out in front of the desks and grouped around the teacher. Here, then, at last we have our old friend the long schoolroom, 18ft. or so in width, having seats on one side only and cross-lighted.

The classes were generally separated by a curtain, and the room was very often an L or T in shape, so that the master could readily overlook all that was going on from the intersection of the arms. Although there was generally a classroom to each department, where a special class could be taken, there is no hint as yet of the classroom plan as now understood. Such, then, was the type of elementary school building which prevailed up to the time of the momentous Act of 1870, which established School Boards.

School Boards

being now established, and the directions of Parliament being peremptory as to the provision of sufficient school accommodation, the building of elementary schools proceeded apace. Public interest in the arrangement and designing of such buildings received a great stimulus; the adoption of the dual desk, with its attendant facilities for placing the desks four or five rows deep instead of only three, brought about greater compactness in the disposition of classes and required a wider plan of schoolroom.

Attention was directed to the various Continental schools, and their relative merits were compared with the type developed from the "pupil teacher" system of this country. It is impossible for me to dwell at any length on foreign educational methods; it will suffice for my purpose to state generally that those of Prussia were found to be at once fairly representative of those of Europe and in a very high condition of efficiency. The condition of entrance and study in these Prussian schools render necessary much greater isolation of the class than with us. A classroom, in fact, as has been well observed, encloses within its four walls a little school in itself. This implies, naturally, a highly-trained teacher in charge of the class who is equal to maintaining discipline without the constant moral support of the headmaster. It is typical of our national methods that, while approving and accepting the type of plan thus evolved, we rejected the method of which it was the logical result. It seems to have been thought that if every class were taught in its own room better and more rapid progress would be made by the scholars; at the same time it was desired to retain the greater economy of teaching power given by grouped classes. It is also typical of our national methods that after a trial school had been built which was considered more or less a failure at the time we gradually evolved a

Combined "Classroom" and "Pupil teacher" System

of our own, which has proved very satisfactory. This trial school was built in 1872 by the London School Board in Jonson Street, Stepney, and marks a most important step in the development of our elementary-school planning. It was erected from the designs of Mr. T. Roger Smith.

The Prussian classroom plan, already alluded to, contained no hall for collective



DESIGN FOR A CRESCENT IN A LARGE CITY BY "CANNY ALNWICK" (SUBMITTED IN THE R.I.B.A. TITE COMPETITION, 1904).

teaching and assembly, though an examination hall was frequently attached to a school, as often as not on the top floor, being used perhaps three or four times in a year for examinations or public functions. Mr. Roger Smith's plan, however, retained the assembly hall or large schoolroom of English tradition, and added classrooms opening out from it on three sides. It was a remarkable plan, and has greatly influenced subsequent school development. And I venture to draw your attention to the fact that it was the outcome of competitive design.

Since then the classroom system has steadily gained in favour, and the corollary of additional trained teachers has been accepted as necessary. The assembly hall, after being abandoned for a considerable period as extravagant, during which time the long schoolroom was made to serve its purpose, has been reverted to. In short, the type of elementary-school plan deduced from the Act of 1870 has been, with local variations, formulated for some time past on the lines with which we are all fairly well acquainted.

I have taken you at some little length through ancient history because I wished to show you, as clearly as might be in the time at my disposal, the growth of the plan from the method of teaching.

[Mr. Simpson here proceeded to refer to the Education Act of 1902, one of the interesting provisions of which is that of sections 8 and 9, by which a local authority is bound to give three months' public notice of its intention to build a new school or substantially enlarge an existing one; during this period certain interested parties, or even "any ten rate-payers in the area," may appeal to the Board of Education and challenge the proposed school as unnecessary: decision as to the validity of such a challenge rests with the Board of Education. Speaking of this, Mr. Simpson said: "It would seem that this provision may very much hamper an education authority in its negotiations for a site. It is clear that the notice should be given at the very outset of the scheme, and before obtaining the approval of the Board of Education. Otherwise the latter might be required to arbitrate in a matter which they had already prejudged. Should the Board, after holding a local enquiry, be satisfied as to the propriety of the proposal, the Local Government Board has then to be applied to for their sanction to borrow money to acquire the site in question. By this time the ground may, at any rate in the owner's opinion, have greatly increased in value, or be no longer in the market. I cannot conceive of private negotiations being carried on effectively where so long a period must, and an indefinite time may, elapse before the transaction can be completed. Of course there are compulsory powers to fall back on, but these do not furnish the most speedy nor the most economical means of acquiring property for public purposes. Some provisional means of ear-marking a site, pending the possible delays, would appear to be needed, such as a short lease with option to purchase in a given time and a forfeit for non-completion. I mention this matter because pretty complete sketch plans and estimates will be required by an inspector holding such an enquiry under the Act.

He is especially directed to inform himself on the question of economy of the rates, and the drawings would have to be prepared at an earlier period of the scheme than heretofore."]

The Board of Education's "Rules."

The experience in school building requirements gained by that most efficient of Government Departments now known as the Board of Education was embodied by them in the admirable code of "Rules to be observed in the planning and fitting up of Elementary Schools."* This code has been revised from time to time as occasion required, and is familiar to all of you who are engaged upon school design. Excellent as it is, the document is not free from the tendency of all official rules to stereotype plan and crystallize design. Left-hand lighting, a very good thing in its way where writing and ciphering lessons are to be carried on, has been elevated into a kind of fetish, whereas for some forms of teaching it is not essential: for the important blackboard demonstrations it is bad—the teacher, unless left-handed, having to work with his back to the light and his face in shadow. The arrangement, favoured by the Department, of open-air sanitary conveniences dates from years ago. To oblige a wretched child quitting a well-warmed classroom to traverse an open playground in rain or snow without even the shelter of a covered way is, in view of modern sanitary conditions, merely barbarous. All latrines should be properly covered in, protected from frost, and accessible dry-shod in all weathers. The rules as to heating and ventilation are hopelessly out of date, though I am bound to admit that the Board of Education exercise a wise tolerance as to their observance. I do not want to stir up strife, but it must be admitted that, whatever demerits it may have under other conditions, the "plenum" system can at least claim to have proved itself a success in elementary day schools.

If however I have little but praise for these Rules for Elementary Schools, which have been woven on a foundation of experience, and have become, so to speak, supple and elastic by age and alteration, I am quite unable to speak in the same terms of the "Rules for the Planning and Equipment of New Secondary Schools," recently issued by the same Department, but

* Published in THE BUILDERS' JOURNAL for November 19th, 1902.

as these are now being revised by Mr. Felix Clay, the architect to the Board of Education, it would be invidious to criticize them in detail. I have no wish to speak severely of a document designed to be helpful, especially one issued by a Department for which I have a real esteem.

The serious thing is that the Board should be issuing cut-and-dried rules for planning buildings of which the actual use is not yet settled. For although "Elementary School" is a term very clearly defined by Article 3 of the "Provisional Code" no definition of secondary education at present exists, so far as I am aware.

I would venture to suggest to the Board of Education that these rules, both for elementary and secondary schools, should be withdrawn, at any rate for a time, until the effect upon elementary school planning has been observed of the higher education buildings to be provided under section 2 of the 1902 Act. It is likely, I think, that the local authorities will be strongly desirous of economizing in the direction of the lower-grade schools with a view to balancing the expenditure on the necessarily more costly secondary buildings. This may possibly take the form of larger classes in the lower divisions, and we may even see a second swing of the pendulum towards the long schoolroom, combined with classrooms.

The "Rules," I would suggest, might be replaced by a carefully-written short treatise upon the actual methods of teaching, illustrating the work of classes in the different standards and their special requirements. It should be written by an architect and a headmaster in collaboration, and be accompanied by sketch-plans of typical buildings, which should be clearly indicated as being suggestions only and not as embodying the considered views of the Board. A new edition revised up to date should be issued every year. Further, I would like the Board to consider school buildings as erected by authority of the Secretary of State, and exempt them from the operation of the in many cases obsolete and absurd local by-laws. The Board has absolute and complete control of the design of the buildings and their construction; and when once they have signified their approval the buildings should not be liable to the ignorant interference of petty subordinate authorities.

I have referred to the secondary school as



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necessarily costly—in additional accommodation. I can conceive of no school going beyond mere elementary teaching, for instance, without a museum; and then there are provisions for art, drama, debate, photography, carpentry, &c.

I would urge in addition some more satisfactory arrangement than a merely covered play-shed for use in bad weather. This may suffice for a day school, but for a boarding school at any rate a plainly-finished room is wanted, where high spirits may be allowed their natural effervescence. A simple method would be to leave piers only in the front and back walls of a portion of the building, filling in the openings with sliding partitions glazed with wire-glass. These would stand open in fair weather, while the weather-side partitions would be closed in case of driving rain or snow. One side should be arranged to open towards the playground.

The Hall

is, above all things, important in the secondary school. The teaching is necessarily much subdivided, and classes will be small, probably reduced to about ten or twelve as events develop, and the hall will be to the scholars the symbol of the school as a united body and not as a class of instruction. And it should not merely be a wide corridor for the classrooms to open from, but a spacious apartment in which school tradition may find a congenial lodging. It should be adapted for all sorts of school functions—lectures, examinations, dances, singing, concerts, &c.

To revert for a moment to the subject of

Economy in School Building.

It is perfectly evident that local authorities will not be able, if their schools are to be kept abreast of educational advance, to reduce the accommodation at present provided; rather they will find themselves compelled to increase it; and anything we as architects can do to assist them in cutting down expenses without impairing efficiency it is our bounden duty to attempt. We are too often (I hope always unjustly) accused of extravagance—generally because of some trifling matter of sculpture or ornament which has caught the eye of the objector. We have all known cases where the expenditure of a few pounds on a morsel of decoration which gave interest and artistic value to the whole composition has excited more adverse comment and reproach than if the building had been raised 3ft. all round. Now, it is not in such directions that saving in any well-designed building may be looked for.

Heights of Rooms.

True economy must be sought in the reduction of cubic contents, and I would suggest that a close study be made of the heights necessary for your rooms. At present it is commonly directed by the school authority that the classrooms shall be 14ft. or 15ft. high. This is quite unnecessary if a proper change of air be provided by mechanical means. Once you have settled on the minimum height of window which will properly light your further desks—and with the tendency to smaller classes this will correspondingly diminish—you have found the height of your room. Instead of 14ft. or 15ft., 12ft., 11ft. or 10ft. may suffice. Consider a moment what this means—from a two-storey building of 30ft. you will have subtracted perhaps 5ft. or 6ft. of height, say 15 to 20 per cent. over the whole building; for the reduced height means not only the twenty odd courses of one-and-a-half-brick or two-brick wall, but lighter girdering, lower and cheaper stairs, better inter-communication, and, not least, longer and lower lines in your composition. Schools as now built are very apt to run into square or even vertical and unrestful lines of design.

To obtain true economy two things are wanted: First, the rules of the controlling Department must be elastic and interpreted with a liberal intelligence, to the encouraging of original thought on the part of the designers; secondly, local by-laws must not be permitted to override designs approved by the State Department. I might add a third want, but you will consider it superfluous—a good architect.

Gentlemen, we are looking upon the dawn of a new era in the education of our country. Bearing in mind that many of my hearers are yet upon the threshold of, as I trust, a prosperous and successful career, you will perhaps pardon me for having spoken to you less of actual school buildings than of the principles which underlie them. For it is the very root matter of good design that it shall arise from the comparative study of what has preceded it. Whether your knowledge of your subject be thorough or whether it be superficial, it shall nevertheless influence your work, in the former case to honour, in the latter to dishonour. It is for us architects, then, to prepare ourselves at this dawn of a new day lest that hoped-for but most searching morning breeze called responsibility catch us unready.

Mr. Philip A. Robson, in a communication he had sent, said there were two vital points which governed all school planning:—(1) The unit, which was the child; (2) the aspect, or north point. The latter simply consisted in this northern climate of ours in giving each unit as much sun as possible. With regard to the unit, unless it was duly regarded, the planning must be bad and therefore the design bad. In elementary National schools the five-seated long desk had been rather a favourite, because at times of entertainments the desks were removed into a classroom or rooms, and by sliding a partition a good-sized hall was often available ready seated. And for the same reasons stepped galleries were avoided. In Board schools dual desks reigned supreme; in higher schools single desks with 18in. gangways were preferred. Hence we should see that to be an economical planner we must study the unit and the seating first. Personally he thought all these systems bad, and that single desks arranged dually, but with, say, a 6in. gap between, would be far better for all purposes. So we should get an 18in. gangway, one 2ft. desk, a 6in. space, another 2ft. desk, and then another gangway, &c. Having settled your seating arrangements, it was well to consider annual maintenance:—(1) Number of teachers and "pupil teachers"; (2) size of classrooms; (3) whether a central hall was required. Owing to its excessive cost outweighing the advantages, the central hall had latterly come rather into disfavour, and a compromise had been made by having a central hall corridor—anything from 12ft. to 20ft. wide—which answered all purposes. With regard to Mr. Simpson's remarks about latrines, to connect these with the school buildings by covered ways was surely hardly necessary, and also wasteful of playground space. Moreover, it hardened children to be about in the open air, and had a tendency to decrease consumption, which arose not from hereditary disease but from unsuitable food and want of fresh air.

Mr. John Slater, in proposing a vote of thanks to Mr. Simpson, referred to the educational system of Prussia, which was started long before ours and was far in advance of the rest of the Continent. He thought the Prussian day school was about the best. The reaction against a Classical curriculum occurred much sooner in Prussia than in England. He was surprised recently to learn that in 1798 they had in Prussia adopted a "leaving certificate," whereas we had not adopted it here yet. Mr. F. J. Osborne Smith seconded the vote, and Mr. Walter Millard and Mr. Henry T. Hare also spoke.

Enquiries Answered.

The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Architect under Government.

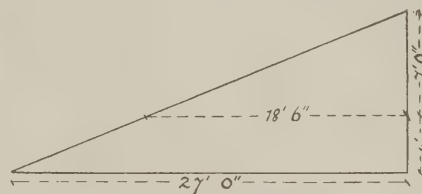
BARNSELY.—PHENIX writes: "Do the Government employ their own architects? If so, would it be possible for a junior assistant to get a position?"

Yes. Sir John Taylor is the chief architect, and Mr. Henry Tanner is the architect of the Post Office branch, of the Office of Works. You should make personal application at the offices, Storey's Gate, S.W.

Slope for Barrels.

BECKENHAM.—DRAYMAN writes: "What is the steepest slope allowed in breweries, &c., for sloping ways up which beer barrels weighing 6 cwt. can be rolled, the depth of basement below pavement being 7ft. and below ground-floor level 11ft.?"

The best slope for a brewery incline for full barrels is shown by the illustration below.



For many purposes barrel hoists are more convenient, especially where there is a lack of space. For a twenty-five-quarter brewery a hoist capable of lifting 150 barrels per hour would be best, and other breweries in proportion.

STEPHEN WILKINSON.

Taking out a Patent.

LIVERPOOL.—ENQUIRER writes: "I am about to take out a patent, but before doing so I should like to know whether there is any official register of patents which I can consult in order to see whether my idea has been acted upon previously."

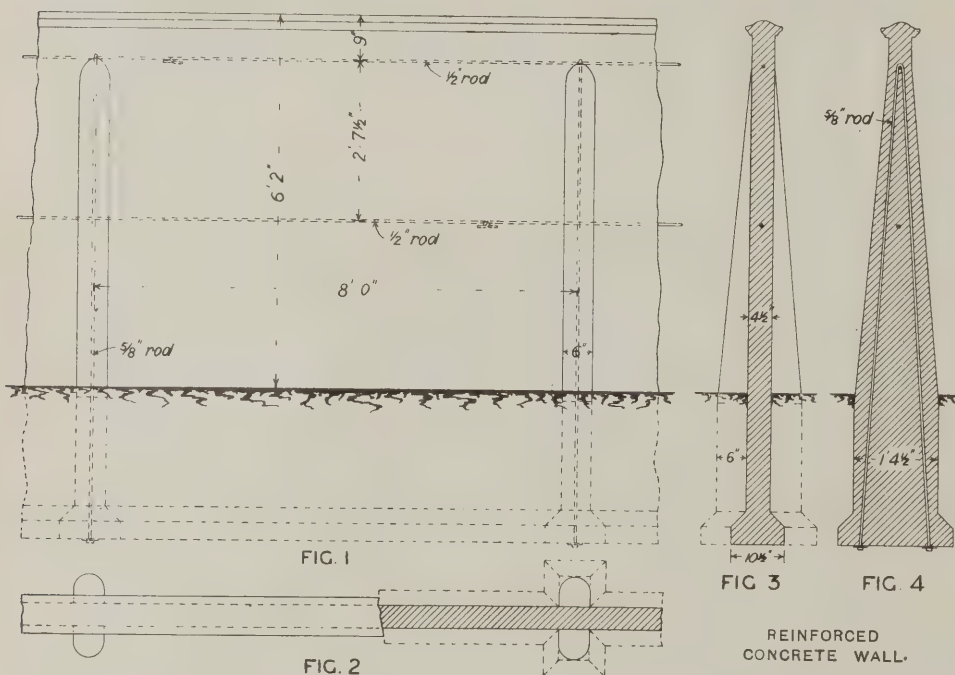
In the public libraries of most towns copies are kept of the illustrated Journal of the Patent Office (published weekly, price 6d.). This gives a brief summary of patents taken out, and from it you should be able to ascertain whether your idea has been anticipated or not. These abridgments are also collected together in sections—such as building and structures, &c.—each extending over three years, &c.—providing a synopsis of every class of patents, available in an excellent form for easy reference. These sectional publications can be consulted at the Patent Office library, and we expect you will find them also in the Liverpool library. Under the Patent Act of 1903, part of which came into operation at the commencement of this year, the Comptroller will indicate if an application for a patent has been anticipated, giving the applicant the option of not further wasting time and money on his idea or so modifying it as to be granted a patent. This prior examination by the Government officials will necessarily entail considerable search and an extra staff of qualified men—and consequently a somewhat increased fee—but it will put the applicant in a much better position than he has been (The Board of Trade have not yet named a date, but it is expected this part of the Act will come into force next January.) We may mention that it is an onerous task to make a thorough search as to anticipation.

and many patent agents who try to gull the public do this work in the most cursory manner, if at all. You are doubtless aware that "provisional protection" for nine months can be secured by a stamp fee of £1, during which time you can approach makers or others in reference to the practical development of your patent without running risks which you might incur were you not "provisionally protected."

Stability of Reinforced Concrete Wall.

FILEY.—R. W. S. writes: "The accompanying elevation and sections show a proposed concrete wall. Kindly give me your opinion as to its stability erected in lengths of 60 yds."

In this case it is proposed to erect a reinforced concrete wall 6 ft. 2 in. high above ground, including moulded coping in the same material. The soil is given as "solid clay loam." The thickness of wall proposed is 4½ in. with a footing 10½ in. by 3½ in., the underside being only 6½ in. below ground-level. At 8 ft. intervals the lower half of the wall is thickened gradually to 9 in. to form a slightly rounded projection acting as a buttress on each side, with a width of 6 in.



above the footing and 9 in. below it. The buttress portions extend for 2 ft. below the footing, like pegs in the ground. The reinforcing is produced by a ½ in. iron rod through the centre of the thickness of the wall 9 in. from the top, and another 2 ft. 7½ in. lower down. Where the buttresses come a double ¾ in. rod is carried downwards, the two portions being within 1½ in. of the face on either side of the wall. The concrete is proposed to be made of 1 cub. yd. sea gravel (½ in. to ¾ in. gauge) and ½ cub. yd. sea sand to 600 lbs. Portland cement. In the first place, on a clay soil it is necessary to carry the foundations much deeper. Adopting the general principle of the design, the whole of the wall should be carried down to the same depth as the buttresses, say a minimum of 2 ft. 6 in. below ground-level. Then the buttresses might commence at the level of the upper horizontal rod and taper from nothing to a projection of 6 in. on each face at ground-level, the face of the buttress being rounded as suggested and left square below ground. The elevation will then be as in Fig. 1, plan as Fig. 2, section through wall as Fig. 3 and section through buttress as Fig. 4. Now for the stability. If one bay be taken the active force will be wind-pressure lbs. per sq. ft. (p) × 8 × 6.083 × 3.0416 = 152p. The

resisting forces would be made up of the weight of the wall, the compression on the buttress on one side, and the tension on buttress and embedded rod on the other side. These would be rather troublesome to calculate but might be done at leisure, meantime a sample piece of wall might be erected.

HENRY ADAMS.

Examples of Architecture.

TEAK writes: "Is there a list published giving the chief buildings in the country with their situations? I do not mean modern work so much as buildings erected in the Norman, Early English and other periods up to more recent times."

No such list as you want is published, so far as we are aware; though of course all the chief examples will be found in the architectural history books and the county histories.

Salary of Clerk of Works.

LISCARD.—WAGES writes: "What is about the usual salary of a clerk of works on a new sewerage scheme (through running sand, with outfalls to sea)?—contract about £25,000."

£3 10s. per week.

moat-house and church upon the other, with an ancient British encampment just above Ightham village, and Knowle House (one of the most famous Elizabethan houses) within a few miles—permission to view and measure which must be obtained in advance from Lord Sandwich. Another equally good circle consists of Tonbridge (timber houses): Penshurst (the seat of Lord de Lisle, and a perfect Tudor residence); Chiddingstone village and church, the former of good half-timber and the latter with much early Renaissance work; and Hever Castle, a late Tudor structure of much beauty. In an entirely different direction, St. Albans, with its cathedral, almshouses and school, is worth several days' study, but the surrounding district is not so rich as Kent. M.

LONDON.—L. M. N. writes: "Please name some building near Hastings containing Early English or Perpendicular detail suitable to measure for the intermediate examination of the R.I.B.A."

In Hastings there is a splendid example of Perpendicular work in All Saints' Church, which has a magnificent east window; St. Clement's, Hastings, is also Perpendicular. There is a church at Ashburnham, nine miles from Hastings, which has a very fine Perpendicular tower. Salehurst church (ten miles) is a most interesting Early English building. It consists of nave, aisles, main chancel and a well-proportioned embattled tower. Etchingham church (twelve miles) is a very fine Decorated structure. The tracery of the windows is very fine, especially the east window, which is Flamboyant. There is also some excellent carving in the chancel. Burwash church (thirteen miles) is mainly Early English, but the tower is very Early Norman; indeed, the baluster shafts of its windows have been regarded as possibly Saxon. Close to Pevensey station is West Ham church (twelve miles), which is very fine Perpendicular with a Norman south transept. Battle Abbey (seven miles): as a portion only is shown to strangers, it is needless to describe it at great length. The abbey precincts are entered from the town through a picturesque Decorated gateway 35 ft. square and 54 ft. high. At the east end of the abbey is an Early English refectory, of which in the east wall there are twelve handsome Decorated windows, in the south wall six, and in the west wall eight. Battle Church is Transitional with Decorated windows. M.

South Kensington Examinations in Building Construction.

J. L. writes: "In what issues did you publish the questions and answers in the above examinations?"

Questions and answers were published in the following issues:—1901 Examinations: Elementary, June 12th, 1901; Advanced, June 19th; Honours, Part 1, June 26th; Honours, Part 2, July 10th ("Correspondence," July 17th). 1902 Examinations: Elementary, May 7th, 1902; Advanced, May 14th; Honours, Part 1, May 28th; Honours, Part 2, July 16th. 1903 Examinations: Elementary, May 20th, 1903; Advanced, May 27th; Honours, Part 1, July 8th; Honours, Part 2, September 23rd and 30th.

Work to Measure near London and Hastings.

T. G. J. writes: "Please mention some good work for a few days' measuring within about twenty or thirty miles of London. I should prefer early Renaissance or domestic Gothic exterior work."

Probably the best district near London is that of Kent. Wrotham station is an excellent centre, with the old bishops' palace of Addington on one side and Ightham

Labourers' Cottages.

TIMPERLEY.—TEAK writes: "Are there any books published giving information and sketches of small cottages suitable for the labouring class—something like the cheapest cottages at Bournville?"

"Houses for the Working Classes in Urban Districts," by S. W. Cranfield and H. J. Potter (15s.), and W. Thompson's "Housing Handbook" (6s.), post free from our offices.

Grindstone Dressers and Cutter Balancers.

TIMPERLEY.—TEAK writes: "(1) Which do you consider the best rotating grindstone dresser for stones, say, 4 ft. by 6 in. thick? (2) Which is the best cutter balancing machine for testing the irons of wood-working planing and moulding machines?"

(1) I should recommend the grindstone dresser made by Messrs. Brunton & Friar, engineers, Great George Street, Westminster. (2) Your purpose would be served by the proportional scale made by Messrs. J. Sagar & Co., Ltd., Canal Works, Halifax, by which the cutters can be readily reduced to the same specific weight and made to agree in their corresponding parts. M. P. B.

[Owing to pressure on our space a number of enquiries are held over till next week.]

Keystones.

A Town Hall at Sutton Coldfield is to be erected.

Radcliffe Parish Church has been reopened after complete renovation by Mr. R. B. Preston, architect, of Manchester.

Liverpool Cathedral.—The King hopes to be able to lay the foundation-stone, but is unable at present to name a date.

The Battersea Polytechnic has been extended by the addition of a domestic economy department, from plans by Mr. E. W. Mountford, F.R.I.B.A.

The Kent County Council have appointed Mr. H. P. Maybury, late surveyor for the Malvern Urban District, as their county surveyor and Mr. F. W. Ruck as county architect.

Fire Stations are being erected by the London County Council at Eltham, in Maida Vale, Kilburn, and in Pickering Place, Bayswater. They have been designed by Mr. W. E. Riley, the Council's superintending architect.

A new Suite of Public Halls in Glasgow is to be erected at the corner of South York Street and Govan Street by the United Banking Society, Ltd. The architects are Messrs. Bruce & Hay, 261, West George Street, Glasgow.

The Doris Memorial, erected at Devonport by the officers and men of H.M. cruiser "Doris" to their comrades who fell in South Africa, is in grey Dartmoor granite, and was executed by Messrs. Harry Hems & Sons, of Exeter, under the direction of Mr. J. F. Burns, borough surveyor of Devonport.

The new Military Hospital at Gibraltar, commenced in October, 1898, is now nearly completed. It consists of four large blocks; one smaller one is to be added. The cost of the four blocks has been approximately £88,000, the total cost of the five blocks being estimated at £120,000. When completed there will be accommodation for about 300 patients.

The Monument to Mr. and Mrs. Gladstone, commissioned by Mr. Henry Gladstone and executed by Sir William Richmond, R.A., for Hawarden Church, has been finished so far as the plaster stage. It will be in marble, with the supporting figures and the reliefs of the tomb in bronze, or bronze partly silvered. The monument is in the form of a double tomb, with the figures of husband and wife lying side by side.

Competition Reform Society.—The committee disapproves the conditions in the competition for a free library at Malvern because—the successful competitor is to prepare working drawings and specifications; if the contractor's estimate exceeds the stipulated sum the council reserve the right to discard the design, in which case only half the premium will be paid and no other compensation given; the council do not bind themselves to select any of the designs. Members are requested to abstain from competing unless the conditions are satisfactorily revised.

Leeds and Yorkshire Architectural Society.—Mr. W. H. Bidlake, M.A., read a paper on "The Romanesque Churches of Auvergne" before the last meeting of this Society. The lecturer observed that France, during the period when the Romanesque style was in vogue, might be regarded as having comprised several architectural districts, and of these none is more distinct than that of Auvergne. The chief interest in these buildings lay in the intermediate position they occupied between the ancient Roman buildings in the south of France and the fully-developed Gothic cathedrals of the north. The paper was illustrated by many fine lantern views.

Mr. Felix Clay has been appointed architect to the Board of Education.

A Synagogue in Belfast is being erected. Mr. Jacobs, of Hull, is the honorary architect.

To become an F.R.I.B.A. after December 31st, 1906, it will be necessary to pass the A.R.I.B.A. examination.

Mr. Arthur S. Williams, architect and surveyor, of Llandilo and Ammanford, has been appointed architect to the Carmarthenshire Education Committee.

Messrs. Jarvis & Richards, of 45, Connaught Square, Hyde Park, London, W., have been appointed architects to the Education Committee of the Surrey County Council.

A Roman Catholic Church at Aughnacloy, Ireland, is being erected by Mr. Robert Cullen, builder, of Portadown, from the designs of Messrs. Doolin, Butler & Donnelly, of Dublin.

Garden Cities in France.—The "Association des Cités-Jardins de France" has just been formed to consider ways and means of founding *villes industrielles* on the model of those existing in England.

The R.I.B.A. Prizes and Studentships for 1904-1905 are as follows:—*Essay Medal*: "The development of architectural art from structural requirements and nature of materials." *Soane*: A royal palace on an open level site. *Tite*: A hotel lounge and staircase. *Grissell*: A winter garden in iron and glass. Other prizes as before. A pamphlet giving full particulars of each is to be had from the Institute, 9, Conduit Street, W., price 3d.

Architects' protest against Surveyors.—The Council of the Northern Architectural Association have protested against the surveyor to the Newcastle City Council, Mr. Holford, carrying out architectural work in the city, when there are duly qualified architects who could do the work. All such work, they state, should be entrusted by competition or selection to local architects. The City Council had not adhered to their undertaking that their officials would not carry out architectural work.

For the Blind.—To have eyes to see, and to see not, is the most dreadful of physical deficiencies. We gladly draw attention, therefore, to the Surrey Association for the General Welfare of the Blind, which gives work to a number of afflicted men and women and maintains a shop at No. 90, Peckham Road, for the sale of articles made by them. These include brushes, baskets and brooms—things which builders and contractors have occasion to use in considerable quantities: we commend the matter to their notice in the hope that they may help, no matter in how small degree, a most worthy institution. The employees work hard for their livelihood, but their workshops, raw material and custom would vanish were it not for the assistance of the charitable.

New Fire Regulations for Theatres.—New rules have been approved by the London County Council with the view of minimizing the risk of fire or panic in theatres. They forbid overcrowding and standing or sitting in gangways, and provide that the seating area assigned to each person must not be less than 2ft. deep and 1½ft. wide in any part of the house, and that there must be a space of at least 1ft. in depth between the front of one seat and the back of the next. All scenery, wings, draperies, floral decorations, hangings, &c., whether on the stage or in other parts of the premises, must be rendered and maintained non-flammable; at least one fireman must be employed during the entertainment; and fire drills for employees must be held at least once a week. Special provision is made with regard to the curtain, and also in respect to "electric fires."

Obituary.

Mr. W. Wealands Bell, builder, of Sunderland, died recently.

Mr. T. Crews, builder and contractor, of Stonehouse, died recently.

Mr. William Nock, builder, of Erdington, died recently at the age of seventy-nine years.

Mr. James Peacock, builder, of Altrincham, who died on January 12th last, left estate which has been valued at £5,787.

Mr. William Millar, modeller and designer, and author of "Plastering, Plain and Decorative," died on Saturday, February 27th, at the age of sixty-four years.

Dr. A. S. Murray, Keeper of Greek and Roman Antiquities in the British Museum, died on Saturday from an attack of influenza complicated by pneumonia. He was born near Arbroath, in Forfarshire, on January 8th, 1841, and educated at the Royal High School of Edinburgh and Edinburgh University; he was also for some time a student at the University of Berlin. In February, 1867, he was appointed Assistant in the Department of Greek and Roman Antiquities in the British Museum, and became Keeper on the retirement of Mr. (afterwards Sir Charles) Newton in 1886. He at once began that rearrangement of the Greek and Roman galleries which has now been completed in its main lines, but which formed one of the principal occupations of his keepership. Mr. Murray's tenure of the post was also marked by the issue, under his editorship and superintendence, of a considerable series of catalogues and other publications dealing with the collections of his department. The chief unofficial works written by him were a "Manual of Mythology" (1873), a "History of Sculpture," in two volumes (1880, 1883), a "Handbook of Greek Archaeology" (1892) and "The Sculptures of the Parthenon" (1903). The last book is based on a course of lectures delivered to the students of the Royal Academy. A considerable part of the work of a museum official consists in receiving an unceasing stream of visitors seeking information on subjects of the most diverse kinds. Such applicants—whether an archæologist of world-wide repute, or a schoolboy with a Roman pot, a scholar editing a Greek play, an actress anxious about her head-dress, or an undertaker seeking patterns of cinerary urns—were always received by Dr. Murray with unwearied patience and unlimited kindness. His scientific position was remarkable for the fact that, almost alone among modern archæologists, he refused to accept the evidences for the early dates that are now assigned to the so-called Mycenaean period of Greek antiquity. His views, however, on the subject were never expounded at length. Deceased was Hon. LL.D. of the University of Edinburgh, a member of the German Archæological Institute, a corresponding member of the Prussian Academy and of the French Institute. He was also a member of the recently founded British Academy, a Fellow of the Society of Antiquaries, a vice-president of the Hellenic Society and a member of the Council of the Royal Institute of British Architects. For many years his Spring holidays were devoted to an expedition to Rome or Athens, or occasionally to some other part of the Mediterranean. In this way he kept up a knowledge of what was passing on the chief sites of classical antiquity, and a wide acquaintance with foreign archæologists other than those who made their periodical visits to his own museum. His loss will be felt by a wide circle of friends who were accustomed to call at his study to hear his views on the last new thing in archæology.

A CENTURY OF BUILDING PRICES.

By T. E. COLEMAN, F.S.I.

THE greatly increased cost of building which has occurred within recent years is frequently remarked upon by building owners, architects and others whose interests are more or less affected thereby; and in many instances the extra cost is assumed to be almost exclusively due to the higher rates of wages now paid. In any true comparison, however, it must be borne in mind that a large proportion of this increase in total expenditure upon all classes of buildings is directly attributable to the improved accommodation or additional conveniences now required, and due allowance should accordingly be made for the extra cost thus involved. Compare the palatial city offices, hotels, theatres or hospitals of to-day—built and fitted with every device which can conduce to the health, safety, comfort, convenience or pleasure of the occupants—with those erected at the commencement of the last century, and a substantial reason for the increased cost of the buildings themselves is at once evident. A modern residence is now as a matter of course provided with gas or electric-light fittings, electric bells, hot and cold water supply, baths, w.c.'s, lavatory basins, expensive fire-grates with tiled hearths and marble mantelpieces, damp-proof courses to walls, concrete under floors for the exclusion of ground vapours, kitchen and scullery fitments, &c., whilst the general finishings are of a more luxurious character. Ten decades ago many of these costly accessories of civilized life were unknown, and the principles of hygienic building construction were scarcely understood or carried into practice. The domestic water supply usually consisted of an outside pump or draw-well, whilst the drainage arrangements and sanitary conveniences were also of the simplest description.

Another element necessarily contributing towards the greater cost of certain descriptions of buildings at the present time is found in the comparatively high average standard of general construction and sanitary efficiency which has become compulsory in consequence of such legislative measures as the Public Health Acts, &c. The requirements of the local sanitary authorities, and the careful supervision exercised by them upon the construction and sanitation of buildings, have necessitated the erection of more healthy—even if more costly—dwellings than was formerly the case.

So far as the principal items of builders' work are directly concerned, it will be seen (after making due allowance for the difference in purchasing value of money) that two general movements have occurred during the past century, the one relating to the cost of labour and the other affecting the cost of manufactured goods. In the one case, the rates of wages paid to all classes of workmen have gradually risen, whilst the prices of manufactured articles as a whole have become relatively cheaper.

Amongst the factors which have contributed towards higher wages may be mentioned the systematic combination of workmen for the purpose of obtaining improved conditions of labour, and the higher standard of living now enjoyed. On the other hand, the universal adoption of machinery has reduced the cost of manufactured commodities, so that articles of common use which formerly were laboriously produced by hand are now turned out to one uniform standard or pattern by machinery and specialized labour. Such materials as bricks, floor-boards, joinery, ironmongery, iron and steel work of every description, lead pipes, &c., are now largely manufactured by

machinery, and their cost has been reduced accordingly.

Before considering in detail the average prices current during the last 100 years, it is interesting to note the cost of a few items of builders' work during the preceding century. In the year 1700 the ordinary London rates were as follows:—

Building Prices in 1700.

Stock brickwork in mortar in walls of buildings, including all materials, labour, and scaffolding	£	s.	d.
per rod	5	0	0
Labour only to ditto	1	2	0
Tiling, including all materials and labour	1	6	0
Labour only to ditto	0	3	6
Thatching, including all materials and labour	0	15	0
Labour only to ditto	0	2	6
Lath, plaster, and set per yd. super.	0	0	8
Render one coat on walls	0	0	3
Bricklayer's wages	0	2	6
Labourer's wages	0	1	8
Red stocks	0	14	0
Lime	0	9	0
Common glass	0	0	6
French glass	0	1	0

It will be observed that good stocks or red bricks are quoted at 14s. per thousand, but place bricks or other inferior descriptions could doubtless be obtainable at lower quotations. In 1735 an experienced builder wrote that "I never knew the price of statute or common bricks cheaper than 9s., nor dearer than 18s. per thousand, delivered in any part of London." The average rates of materials, &c., at this date were as follows:—

Building Prices in 1735.

Brickwork in buildings, including all materials and labour per rod	£	s.	d.
Bricks	6	10	0
Tiles	0	16	0
Lime	1	4	0
Sand	0	11	0
Oak or fir timber	0	3	0
per load of 50 ft. cube	2	15	0
Laths	0	1	6
Lath and plaister	0	0	10
Lath, plaister, render, and wash with white and size	0	1	2

In 1776 a book was published entitled "The Builder's Price-book, containing a correct list of the prices allowed by the most eminent Surveyors in London to the several artificers concerned in building. Collected by an experienced Surveyor. Printed for J. Taylor at the Bible and Crown, near Chancery Lane, Holborn." Some of the more important items and prices of builders' work are here given, the old form of spelling being retained where any differences occur.

Taylor's Builders' Prices for 1776.

EXCAVATOR'S PRICES.

Digging according to the quality of the soil, exclusive of carriage	
is from	per yd. cube 6d. to 1s.

BRICKLAYER'S PRICES.

Brickwork laid dry in wells per rod	£	s.	d.
Brickwork in buildings (all place bricks)	5	0	0
Ditto ditto (all grey stocks)	6	6	0
Labour and mortar only is from 55s. to 63s. per rod.	8	0	0
Common grey stock brickwork in tarras	0	1	3
thick	0	1	3
Tarras and labour only exclusive of the bricks	0	0	10

At this time there seems to have been a considerable difference between the cost of ordinary stock brickwork at £8 per rod and stock brickwork in tarras at £17 per rod. A similar difference is seen in the cost of labour and mortar at 55s. to 63s. per rod and labour and tarras at £11 6s. 8d. per rod.

This item of "brickwork in tarras" would appear to have been the old-time equivalent of the present day "brickwork in Portland cement." It was evidently in general use, for a similar item appears in other builders' price-books of a little later date. Tarras was probably a natural cement of the same nature as those now known as "Trass" and "Pozzuolana," both of which are obtained from volcanic ashes or pumiceous earths. Trass is found chiefly in Germany near the sites of extinct volcanoes, and is now sometimes used for mixing with Portland cement. Pozzuolana is a similar material obtained from Vesuvius at Pozzuoli (near Naples) and still extensively used in the South of Europe. In 1776 the additional cost of brickwork in tarras over lime-mortar appears to have been from £8 to £9 per rod, but to-day the extra cost of brickwork in Portland cement over lime-mortar is only about £2 10s. per rod, so that a considerable reduction has taken place in this item of builders' work. On deducting the rates for "labour and mortar" and "labour and tarras" from the respective prices of £8 and £17 per rod already mentioned, we find that the prime-cost price of stock bricks at that time would average less than 20s. per thousand delivered on the site.

ARCHES.	s.	d.
Gauged brickwork in straight or circular arches set in putty		
per ft. super.	1	6
Elliptical arches set in putty ditto	2	2

N.B.—All gauged work to be measured and paid for first as common brickwork.

POINTING.

Tuck and patt to new work		
per ft. super.	o	5
N.B.—If coloured add - ditto	o	1

BRICKNOGGING.

Grey stock-work laid edgeways			
	per yd. super.	1	6
Ditto ditto flat - - - ditto		2	0
N.B.—The quarters to be measured in.			

BRICK PAVING.

Grey stocks laid flat in mortar	- per yd. super.	rs.	rod.	to 2s.
Ditto ditto on edge ditto		2s.	6d.	to 2s. 8d.

PANTILING.

New pantiling laid dry, including hyps and ridges in mortar		
per square	18	0
New pantiling bedded and pointed inside and outside - - ditto	26	0

PLAIN TILING.

Plain tiling, new lathed and tiled	-	-	-	per square	28	0
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SLATER'S PRICES.

Tavistock slating	per square	34	0
Welch slating	per ft. super.	0	3
Ditto on heart oak laths			

	per square 32s. or 35s.
Westmoreland slating on boards	
	ditto 58 0

MASON'S PRICES.

TOTTENHOE STONE.			
Tottenhoe stone	- per ft. cube	2	1
Plain work to ditto	per ft. super.	0	6
Moulded work	- - - ditto	0	9

PORTLAND STONE.

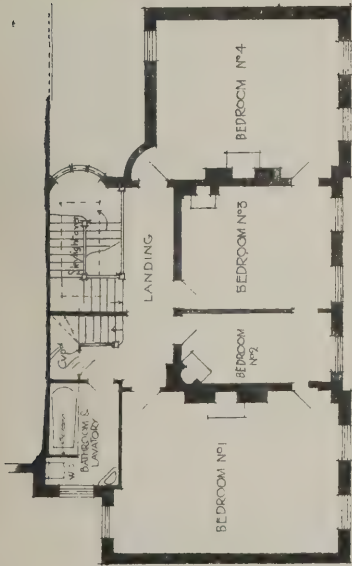
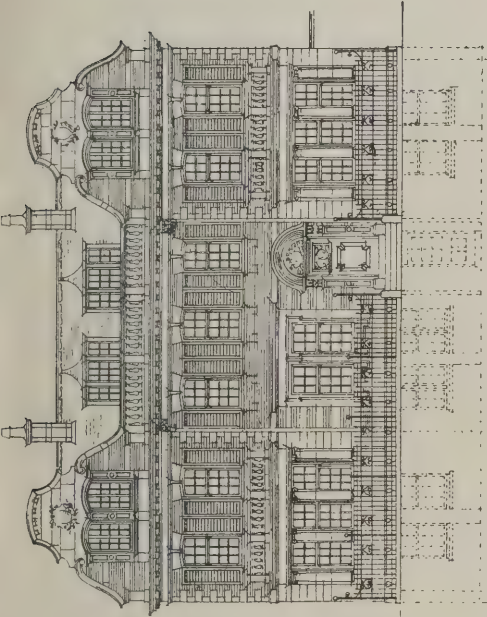
Portland stone measured neat		
	per ft. cube	2 6
Plain work to ditto	per ft. super.	0 10
Sunk work to ditto	- - ditto	1 0
Moulded work -	- - ditto	1 3

Tottenhoe and Portland are the only two building stones quoted in the price-book. It is probable that Bath, Ancaster and other well-known stones were not much used in the metropolis at this date owing to the difficulty and expense of transport. Tottenhoe stone (being quarried in Bedfordshire) was obtained at no great distance from London whilst Portland stone was capable of being brought by water.

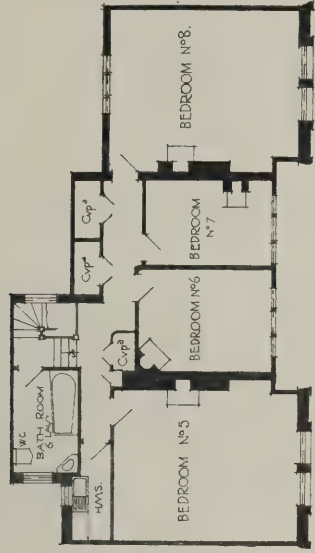
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Wednesday, March 9th, 1904.*

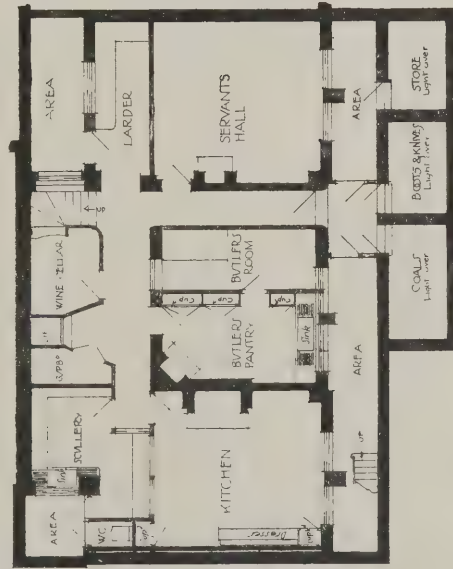




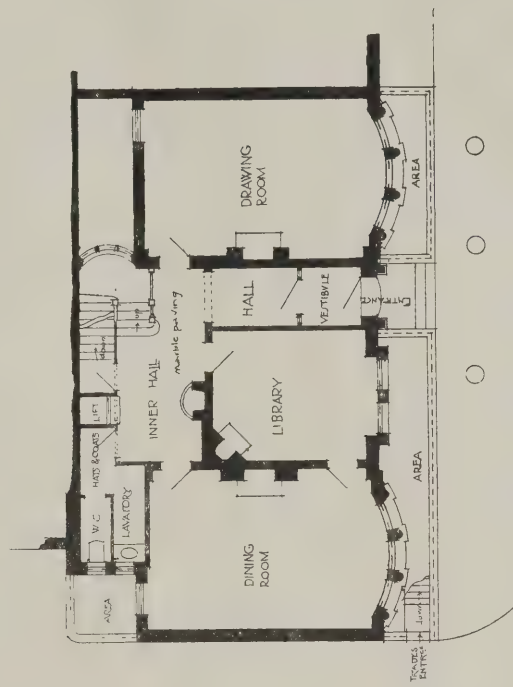
FIRST FLOOR PLAN



SECOND FLOOR PLAN



BASEMENT PLAN



GROUND FLOOR PLAN



NO. 67A, HARLEY STREET LONDON, W. W. HENRY WHITE, A.R.I.B.A., ARCHITECT.

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CARPENTER'S PRICES.

FIR TIMBERS.		
Rough fir in lentells, bond, &c. - per ft. cube	1s. 10d. to 2s.	
Ditto framed in naked flooring, &c. - ditto	2 4	
Ditto wrought and framed ditto	2 8	
Ditto planed, framed, beaded and rebated ditto	2 10	
OAK.		
Rough oak per ft. cube	3 0	
Rough oak and labour ditto	3 6	
Oak planed and framed ditto	4 6	

Oak in scantling appears to have been obtainable at about $1\frac{1}{2}$ times the cost of fir timber, whilst to-day oak costs more than twice the price of fir. It is probable that in many country districts oak of local growth could be obtained at less price than imported fir timbers, and this would no doubt account to a large degree for the extensive use of oak timbers in old English buildings.

BRACKETTING.

Bracketting to cornices	per ft. super.	4d.
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CENTERING.

Common centering to vaults	per square	10s. to 15s.
Ditto to apertures - per ft. run		4d.

ROUGH BOARDINGS, &c.

Sound boarding - per square	15s.	
rin. battening to walls - ditto	6s. 6d.	

FLOORS.

rin. deal rough flooring, edges jointed - per square	22s.	
$1\frac{1}{2}$ in. deal rough flooring ditto	24s.	
rin. white deal flooring, folded. From - ditto	25s. to 27s.	
rin. yellow ditto. From ditto	30s. to 32s.	

Inch deal.

Rough - per ft. super.	3½d.	
Planed one side - ditto	4d.	
Ditto both sides - ditto	6d.	

Sashes and frames.

Deal-cased sash frames, oak cills, rebated $1\frac{1}{2}$ in. wainscot sashes, rin. deal inside and outside linings, whole deal pulley pieces, beads and parting stops, double hung, with lead weights complete	per ft. super.	1s. 6d.
Ditto, ditto, with 2in. sashes	ditto	2s. 2d.

Doors.

rin. deal ledged doors	per ft. super.	6d.
rin. ditto rebated and beaded	ditto	6½d.
$1\frac{1}{2}$ in. three pannel bead flush and square - ditto		8d.
2in. four pannel deal square work doors - ditto		9d. to 11d.
Hard woods.		
$1\frac{1}{2}$ in. elm planed one side	per ft. super.	4d.
3in. rough elm and labour	ditto	10d.
rin. wainscott planed one side	ditto	6d.
rin. ditto planed both sides	ditto	7½d.

PLASTERER'S PRICES.

Walls.		
Rendering one coat rough	per yd. super.	3d.
Ditto set - ditto	4d. or 5d.	
Ditto set and trowelled smooth for paper - ditto	6d.	
Floated rendering - ditto	6d. or 7d.	
Ceilings and partitions.		
Lath and plaster one coat	per yd. super.	7d. or 8d.
Ditto and set - ditto	9d. or 10d.	
Ditto two coats and set	ditto	1s.

PLASTERER'S PRICES—cont.

Ceilings and partitions—cont.		
Floated lath and plaster, set	per yd. super.	1s. 10d.
Ditto on strong fir laths and 4d. nails, and washed and stopped for painters - ditto		1s. 6d.
Ditto, set in plaster and putty - ditto		1s. 3d.
Floors.		
Grey plaster floors per square		55s.
Red ditto - ditto		60s. to 80s.
N.B.—"The floors should be $1\frac{1}{2}$ in. thick."		

Cornices.

Plain plaster cornices	per ft. super.	9d.
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Limewhiteing, &c.

Limewhiteing - per yd. super.	1d.	
Wash, stop, clear-coal and white - ditto	1½d.	

SMITH'S PRICES.

All hammered work such as new iron rails, &c. - per lb.	4d.	
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PAINTER'S PRICES.

Plain painting.		
Painting once in oil	per yd. super.	2d.
Ditto twice - ditto		4d.
Ditto four times - ditto		8d. or 10d.
Sash frames.		
Sash frames, once in oil - each		5d.
Ditto twice - ditto		10d.
Sash squares.		
Sash squares once in oil	per doz.	5d.
Ditto twice - ditto		10d.
Graining, varnishing, &c.		
Mahogany grained	per yd. super	1s.
Ditto grained and varnished	ditto	1s. 2d.

Gilding.

Gilding with gold per ft. super.	3s. 9d.	
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GLAZIER'S PRICES.

New green glass per ft. super.	6d.	
Newcastle crown glass - ditto	9d.	
Second crown glass in sashes	ditto 11d. to 1s.	

The following are some of the day-work prices taken from the same book, but they have been grouped together for convenience of reference and comparison. These prices refer to jobbing work, and of course include the builder's trade profit, &c., which would probably average about 20 per cent. of the prices quoted:—

DAY-WORK PRICES (1776).

LABOUR.		
Bricklayer (from Lady-day to Lord Mayor's day) - per day		3 6
Ditto (from Lord Mayor's day to Lady-day) - ditto		3 0
Labourer (from Lady-day to Lord Mayor's day) - ditto		2 2
Ditto (from Lord Mayor's day to Lady-day) - ditto		2 0
Carpenter - ditto		3 0
Slater - ditto		3 0
Plasterer - ditto		3 0
Plasterer's labourer - ditto		2 0
Ditto boy - ditto		1 4
MATERIALS.		
Bricks.		
Place bricks - per hundred		2 6
Grey stocks - ditto		3 0
Red stocks - ditto		4 0
Windsor bricks - ditto		8 0
Tiles.		
Pantiles - each		0 1½
Plain tiles - per hundred		3 0
Limes, mortar, &c.		
Lime - per hundred		12 0
Mortar - per load		14 0
Tarras - ditto		84 0
Lime and hair pargeting - ditto		21 0
Plaster - per cwt.		7 0
Sand - per load		5 0

MATERIALS—cont.

Laths, hair, &c.		
Fir laths - per bundle		1 3
Oak laths - ditto		2 6
Hair - per bushel		2 0
Whiting - per dozen		0 2
Size - per gallon		0 4

Slates.

Welch slates, cut - per hundred	4 6	
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Timber.

All fir timber, Riga, Memel, Dantzick, Narva, Brewick, sawed or unsawed - per ft. cube	2 0	
Oak timber in common scantlings	ditto	3 0

All oak sawed die square not exceeding 13ft. long and 10in. square - ditto	4 0	
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Deals and battens.

Twelve ft. 2½in. yellow battens each	3 0	
Ditto 2½in. deals - ditto	4 4	
Ditto 3in. ditto - ditto	5 4	

Hard woods.

rin. right wainscot - per ft. super	0 7	
rin. oak plank - ditto	0 3	

Ironmongery, &c.

All sorts of locks, hinges, &c., to add ½th of their cost from the ironmonger, as 10d. hinges at -	1 0	
All nails and brads from the 6d. to 2d. brad to be charged by their names. Five score to the hundred.		
One hundred 20d. nails -	1 4	
Tenpenny ditto -	0 8	
All weight nails, such as 2s., 30d., 40d., &c. - per lb.	0 6	
Screws - per dozen	0 6	
Glue - per lb.	0 8	
Sash line (large) - per yd. run	0 1½	

The builder of the olden time evidently expected to obtain an average profit of 20 per cent. upon his business outlay, so that, taken as a whole, the trade must have been a much more leisurely and profitable undertaking than many contractors find it now.

Iron, &c.

Smiths will allow for—		
Old iron bars - per cwt.	12 0	
Old casements - ditto	7 0	
Old bushel iron - ditto	4 6	
Old cast iron - ditto	2 3	

"N.B.—But it is said that in war time they will allow double the above price for old cast iron."

Lead, &c.

Lead, &c.		
New lead for gutters - per cwt.	19 0	
Ditto for sash weights - ditto	18 0	
Milled lead for flashings - ditto	21 0	
Sodder - ditto	90 0	
¾in. lead pipe - per yd. run	2 3	
rin. ditto - ditto	3 3	
2in. ditto - ditto	6 0	
1½in. brass stop cock - each	12 0	
2½in. ball cock - ditto	42 0	
"N.B.—Plumbers will allow for old lead 16s. per cwt., by which means they have 3s. for the change of each cwt. It is customary in the weighing of old lead to deduct 1lb. in every cwt. for dirt."		

From an examination of the day-work prices (after deducting the trade profit and reducing the labour rates to the hour standard), it would appear that the London rates of wages averaged about 3d. per hour for skilled workmen and 2d. per hour for labourers. A great increase has therefore taken place since that time as compared with present-day rates of 10½d. to 11d. per hour for skilled labour and 7d. per hour for labourers. With regard to the average cost of building materials, the difference is not so striking, but the present prime-cost rates of 35s. per thousand for common stocks, lime at 10s. 6d. per hundred, fir timber at 2s. per ft. cube, &c., do not compare unfavourably with the rates current in 1776 when the difference in the value of money is taken into consideration.

(To be continued.)

Builders' Notes.

"Loco" Rust-Pockets.—Messrs. The "Loco" Draining Apparatus Co., Ltd., referring to the enquiry about their rust-pockets for drain pipes on p. 106 of our issue for last week, inform us that their present address is Old Exchange Chambers, King Street, Manchester.

National Association of Master-Builders.—At the half-yearly meeting, held in London, a hearty invitation was received from the president of the Yorkshire Federation (Mr. E. Good, of Hull) to hold the next half-yearly meeting in Yorkshire, and at a subsequent meeting of the Executive of the Yorkshire Federation it was decided that the meetings to be held in July next should take place at Scarborough, and that Messrs. A. W. Sinclair, president of the Scarborough Master-Builders' Association, and R. R. Carr, vice-president, be asked to make the necessary arrangements for the forthcoming visit.

Fire Test with Uralite.—On Wednesday last the British Uralite Co., Ltd., carried out a test to prove the fire-resisting properties of Uralite in Newton Street, Birmingham, on vacant ground lent for the purpose by the Corporation. Various timber structures protected by Uralite sheets were subjected to a fierce fire which reached a temperature above 2,000 degs. Fahr. The test was witnessed by more than 200 gentlemen, including Superintendent Tozer, chief of the Fire Brigade, the borough electrical engineer and his assistants, and various other officials of the Corporation, besides architects, members of the theatrical profession, engineers, builders, contractors and others interested in fireproof construction. The test proved conclusively the excellent fire-resisting qualities of Uralite.

Ventilation of the House of Commons.—In spite of the many attempts made to improve the ventilation of the Houses of Parliament it is undoubtedly a fact that members experience very depressing effects therein. It has now been decided to thoroughly overhaul the arrangements and to install new ventilating plant. Messrs. Mathews & Yates, Ltd., of Swinton, Manchester, also of London, Leeds, Glasgow, &c., have been entrusted with the order for this plant, and it is hoped by the commencement of another session to have it installed. Experiments already made give the assurance that such an improvement will be effected throughout that members will have no further cause for complaint. During the past two years or so Messrs. Mathews & Yates have supplied sixty or seventy fans for the ventilation of committee-rooms, division lobbies, lavatories, &c.; and it is doubtless due to the satisfactory working of these fans, and the results obtained therefrom, that they have now been entrusted with the larger work of ventilating the debating chamber itself.

Bristol Clerks of Works and Builders' Foremen's Association.—The eleventh annual dinner was held recently, Mr. A. P. I. Cotterell, F.S.I., presiding. Mr. T. S. Cotterell, J.P., in responding to the toast of "Trade and Commerce," said that Bristol was progressing more than any other city in the country. Mr. E. Turner proposed the "Architects and Engineers," which was responded to by Mr. F. W. Wills, F.R.I.B.A., and Mr. Dare Bryan, F.R.I.B.A., the latter observing that clerks of works and builders' foremen were like non-commissioned officers—they were the backbone of the architects. Mr. S. Doddrell proposed the "Bristol Master-Builders," expressing the opinion that a thorough understanding should exist between them and the foremen. Mr. E. J. Neale and Mr. R. F. Ridd (respectively president and vice-president of the Bristol Master-Builders' Association) replied. The toast of the evening

was given by the chairman, who said there was the goodly number of 140 present, of whom between 40 and 50 were members of the Association. Mr. H. J. R. Davis and Mr. J. J. Rogers replied. The last toast—that of the "Chairman and Visitors"—was proposed by Mr. William Kidwell, secretary of the Association.

Views and Reviews.

The Implacable Artist.

How these fierce discussions came on to paper is hard to guess, but we assume Mr. Day and Mr. Crane sat each side of the room (perhaps as initiators of the National Sporting Art Club) and, at a signal, rose to harangue about the artist and his position in modern life, while that indispensable product of our mechanical age, a shorthand writer, scribbled off his hieroglyphics, awe-inspired, distracted, etheralized. Then, after the heated advocates had effectually squashed one another, they had a respite (the conversation during which is not reported, though we may believe it may have related to the futility of all this business). And so on, till after innumerable misrepresentations and corrections and bickerings about art and craft, we come to the end of this little joke-book, very much in the same state of enlightenment as when we began it, though certainly amused. The book will not go down to posterity, but it provides a good shilling's-worth of fun. Everyone will start to read it with a prejudice, and will favour one man or the other throughout the ninety odd pages. We had a prejudice for Mr. Day's outlook, and we found ourselves well pleased when he said that the fight with circumstances was just what the artist wanted "to make a man of him, and not a mere emotionalist." Mr. Crane has put some funny little sketches at the end of the chapters, and in these we see Mr. Day apotheosized, with Labour and Art at his feet linked by a chain, on which he stands like any balancer at the "halls," his outstretched arm holding the mystic inscription, "Let me design and let who will carry out"; while on another occasion he leans on a tee-square, bound to his plan and ornament, while two delightful ladies mutter to Mr. Crane, sketching in the distance, "Oh! how lovely, perfectly charming." Finally we see Mr. Day, who has been objecting to animals in decoration, seized at the back by a huge bull dog: and there's the conclusion of the whole matter.

"Moot Points: Friendly Disputes upon Art and Industry between Walter Crane and Lewis F. Day." London: B. T. Batsford, 94, High Holborn, price 1s. nett.

Applied Mechanics.

Professor Jamieson's text-books are recognized and adopted now in many schools, and the favour in which they are held is well bestowed. These volumes on applied mechanics and mechanical engineering are perhaps his best-known works. They are eminently the work of a practical man, and as such are more easily understood by, and strike home much closer to, the ordinary practical engineer than the abstruse though more thorough mathematical works of such men as Rankine. Vol. I. (now in its fourth edition) is divided into two parts: (1) "The principle of work and its applications; friction, power tests, with efficiencies of machines"; and (2) "Tooth, friction, belt, rope, chain and miscellaneous gearing, with their applications to machines; shapes and strengths of teeth; automatic tooth-cutting machines; velocity; ratio and power transmitted by gearing." Vol. II. (now in its third edition) is divided into another four parts: (3) "Motion and energy; practical applications to governors, flywheels and centrifugal machines"; (4) "Graphic statics and applications to roofs, cranes, beams, girders and bridges"; (5) "strength of

materials; stress, strain, elasticity, factors of safety, resilience, cylinders, chains, shafts, beams and girders"; and (6) "hydraulics; hydraulic and refrigerating machinery." The parts are arranged as a series of lectures, with questions at the end of each. Mechanical engineering moves so fast nowadays that continual revision of text-books is necessary; electrical machines particularly have latterly come into first prominence, and we are glad to see Professor Jamieson has kept his book up to date in this respect, illustrating and describing all the chief applications of electrical machines to the driving of tools and cranes, and comparing their results with common practice. The illustrations throughout are excellent, and the advantages of photography have been recognized and largely adopted. A photograph of a machine, together with a working drawing, will enable one to understand the construction in half the time. We are glad to see Professor Jamieson has included a tabular list of symbols and abbreviations used in engineering calculations, for there is a want of uniformity among engineers and architects that is most worrying and wasteful of time. Volume II. more closely touches the student of building construction, and the chapters on graphic statics and applications to the designs of girders, roof-trusses, &c., are short, compact with useful knowledge and admirably clear in explanation. At the same time the little difficulties of the action of wind stress on elaborate roofs is not dealt with, as usual in the ordinary text-books. One often wonders whether the authors really know their subject and can solve such problems for themselves. We fancy there is rather too much repetition, and we still await the book that shall give the practising architect really what he wants in the way of methods of calculating stresses in elaborate and peculiar shaped constructions under variations in loads, oblique thrusts and vibrating or rolling loads.

"A Text-book of Applied Mechanics and Mechanical Engineering," by Andrew Jamieson, M.I.C.E., Vol. I., Fourth Edition. Vol. II., Third Edition. London: Charles Griffin & Co., Ltd., Exeter Street, Strand, W.C., price 8s. 6d. each volume.

Bricks and Mortar.

Aphorism for the Week.

Those Gothic cathedrals . . . of which we may produce more or less faithful imitations, but to the number of which we shall never add another.—SIR JOHN SEELEY.

Our Plates.

MR. OLIVER HALL'S drawing is referred to on page 113 of this issue.—No. 67A, Harley Street, London, W., is built of red bricks with Portland-stone dressings, the roof being covered with Westmorland slates. Inside there is a good deal of panelling, ceiling decoration, &c.

Louisiana Exhibition.

FOR the British exhibit at the St. Louis International Exhibition, models, plans and designs for public works have been brought together from thirty widely-distributed sources. Perhaps the most interesting is that of the Assuan Dam, made for the purpose by Sir John Aird & Co. Among other notable features are models of a fever hospital by the Glasgow Corporation; plans and photographs of bridges and irrigation works by the Public Works Department of India; elaborate plans and models of the new Birmingham water-supply scheme by the engineer, Mr. James Mansergh; models of lighthouses by Trinity House and the Commissioners of Irish Lights; plans or views of docks by the Bombay Port Trust, the Commissioners for Leith Harbour, the London and India Docks Co., the London and South-Western Railway, and the Mersey Docks and Harbour Board.

BUILDING BY-LAWS REFORM ASSOCIATION.

THE second annual general meeting of the Building By-Laws Reform Association was held at Grosvenor House on February 29th.

In moving the adoption of the annual report, the chairman (Sir William Chance, Bart.) invited members of the Association to forward their experiences of the hardships created by existing by-laws, with a view to their publication in pamphlet form. There should be an exemption clause in all by-laws, at least as affecting the parts of buildings above ground; and there should be no interference with a private individual who erected property upon his own estate and apart from other buildings; and the man who provided gardens for his tenants should receive greater consideration than the man who did not do so.

Lord Hylton, in seconding the adoption of the report, said as a landowner in more than one county he had seen the deleterious effects of hard-and-fast building by-laws, and the consequent restriction of the erection of labourers' cottages. He cited several instances where he had been interfered with by building authorities, and thought legislation was urgently required to relieve rural landowners from building restrictions upon their private estates.

Mr. T. Myddelton Shallcross regretted he was unable to support the adoption of the report, which he held to be an inaccurate description of the events of the past twelve months; mention was not made in it of the facts that so early as June 18th last a draft set of amended by-laws, which dealt with constructional details instead of principles, was submitted to the Council for adoption, but rejected; that the special committee appointed by the Council on May 14th last adopted, but only by a majority of the voting power, a draft set of amended by-laws which similarly dealt with constructional details instead of principles, and which draft by-laws were accepted by the Council; and it was an anomaly to state that "the amendments needed to the existing building by-laws" were still under consideration by a "By-laws Committee." He averred that

the Council had not assisted "as far as possible in suitable cases those who may be unduly interfered with by building by-laws and regulations," nor even to the extent of merely moral support, notably in the Great Salterns Estate (Portsmouth) case. The existence of the Association being thoroughly well advertised and known, there was no justification for stating in the report that the lack of support so far extended to it might be explained by want of knowledge of its existence: it should rather be traced to the fact that the objects of the Association had not so far been carried out as stated in the articles of association, and that, until a way of carrying out those objects was duly placed before the public, there was no obvious inducement for the public to become members of the Association.

Sir Edmund Fernie seconded the amendment.

Mr. Mark Judge said the Council were all in accord excepting Mr. Shallcross, and he thought the latter should have agreed with the majority of the Council or have retired: instead of which he had remained on the Council and given out his intention of obstructing the carrying out of the policy of the majority of the special committee. So the Council had dissolved the special committee and elected another special committee, omitting Mr. Shallcross's name.

The chairman then put the amendment to the meeting and it was lost by a majority; the report was subsequently carried.

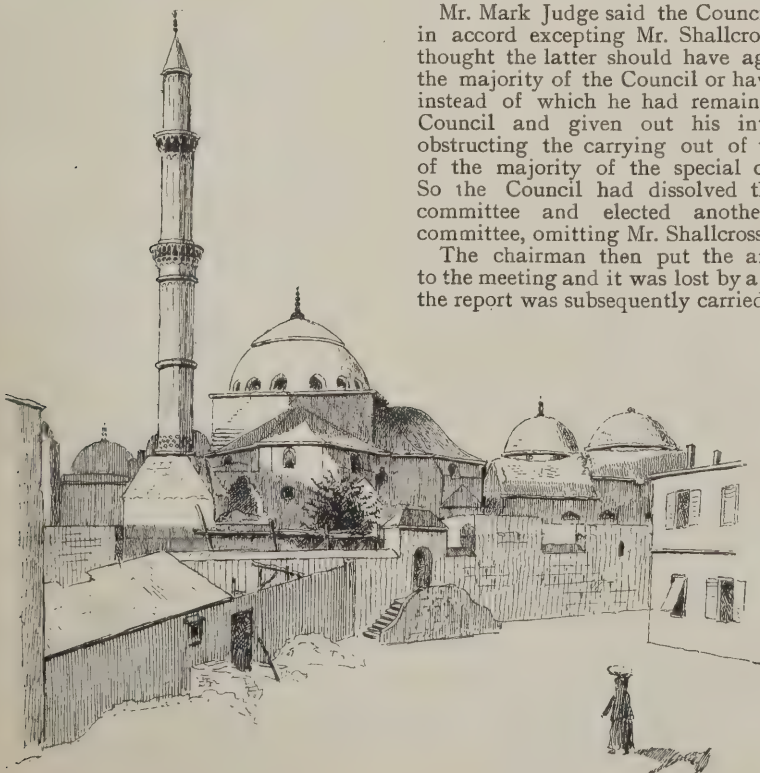


MOSQUE OF MOHAMMED ALI AND MOKATTAM TOWER, CAIRO. DRAWN BY A. E. HALL.

The Council for the ensuing year was elected as follows:—Sir William Chance, W. M. Acworth, Lord Robert Cecil, A. H. Clough, Hon. John E. Cross, Anderson Graham, W. Henman, Mark H. Judge, E. L. Lutyens, Arthur Newbold, Dr. G. V. Poore, H. A. Powell, Lacy W. Ridge, R. W. Schultz, J. St. Loe Strachey, E. D. Till, Thackeray Turner, Christopher Turnor, H. G. Willink, Hon. Percy S. Wyndham.

Mr. John Martineau observed that the best building by-laws were no by-laws at all, and he thought that, when detached from other property, the buildings of rural landowners should be free from such restrictions. Mr. H. S. Storey said that all cottages built by a landowner on his estate for his own people should be free from by-laws. Mr. James Martin, speaking as a builder and a member of a district council, said it was impossible to convince some district councillors of the disadvantages of hard-and-fast by-laws; he thought there should be no by-laws enforced when an architect was looking after a building. The masses of the people ought to be educated to look to their own interests. Mr. H. A. Powell said that local authorities could ignore their own by-laws, and that that was the best way out of the difficulty. Mr. R. A. Read, the hon. secretary of the Association, thought the last speaker's advice was dangerous, as any ratepayer could obtain a mandamus from the King's Bench to compel the local authority to carry out their by-laws. Mr. H. G. Willink agreed that it would be dangerous for local authorities to ignore their own by-laws. He thought there was something to be said for hard-and-fast by-laws, as it would be wise not to lose the support of medical officers of health, and these relied considerably upon hard-and-fast by-laws for the protection of small cottagers.

Sketches of Cairo.—The sketches reproduced on this page were made by Mr. A. E. Hall, architect and chief draughtsman Royal Engineers' Office, Headquarters, Cairo. The mosque of Mohammed Ali was begun in 1824 and is a conspicuous feature from every side, though it has been considered too foreign an importation—a child of Stambul—to harmonize with the true Cairo style. It was Mohammed Ali who directed the Europeanizing of Cairo in the nineteenth century, which destroyed so much by its street-making schemes.



SIDISARIA MOSQUE, CITADEL, CAIRO. DRAWN BY A. E. HALL.

THE WORKMAN OF THE MIDDLE AGES.

AT the Carpenters' Hall last Thursday Mr. C. R. Ashbee, M.A., delivered an interesting lecture on "The Workman of the Middle Ages," Viscount Dillon presiding. In studying the mediæval workman, said Mr. Ashbee, we must keep in mind three essential points, the pivots on which life in the Middle Ages hinged—first, life was aristocratic; second, it was religious; third, it was æsthetic. The feudal system implied an aristocracy, and the mediæval workman lived in an exclusive society of his own, girt around with charters and privileges—a democratic and collectivist society in itself, though exclusive and impossible of access to the outside world.

Again, mediæval life was religious. The conduct and actions of men were swayed by supernatural and ultra-rational considerations in a way it was very difficult for us to realize. Faith, belief, superstition—whatever it might be called—swayed society as one.

Finally, mediæval life was æsthetic. It implied an understanding and an enjoyment of those qualities in our nature that are the outcome of leisure and imagination—the love of music, the love of form, the love of colour. And this æsthetic element of life found its highest expression in architecture, in the art of ecclesiastical building. The best men, the greatest minds, the finest genius of the workshop went into building; it was the popular art, which everyone understood and appreciated. It was impossible to find in our own time a parallel to the place held by the building art in the Middle Ages, because modern interests were so varied. The builder's art was the great occupation and the Church was the great profession. Mr. Ashbee therefore chose as his typical mediæval workman a mason—a member of the craft which left the noblest relics of its work and which served as a model in matters of organization to all other crafts.

Speaking of the mediæval state in which this workman lived, the lecturer pointed out that the whole population of England then was less than that of London to-day, and that the bulk of the people lived in what we might call walled villages. In these townships the guilds exercised the functions of magistrate, employer of labour, town council, labour bureau, factory inspector, benefit club and possibly also public school. Every able-bodied citizen belonged to some guild or other. The guilds legislated for the group of workshops belonging to their own trades, and together they governed the town, their ideal being the maintenance of the life of the citizen in its highest form.

The requirements of the mason's craft were set forth in a curious and interesting way in a poem of the time of Richard II. The very first article insisted on the character and genuineness of the workmanship. Another required the master-mason to attend the general congregation of his craft. Another demanded a seven years' apprenticeship, and laid down the duty of the master to his apprentice. The apprentice must be able-bodied and the master must not pay him as much as a journeyman, that is, there must be no undercutting by boy labour. No thief was to be admitted to the craft, and co-operation rather than competition was to be the rule. The master must teach his apprentice, and must do nothing that would turn the craft to shame. The great work which the masons had left to us testified to the fact that they did not fall far short of their code of rules. The poem pointed to a standard of gentlemanliness and refinement among the workmen that was perhaps in advance of that of the operatives of to-day.

As to the mediæval mason's manner of work, his was a long day but not a hard one.

Men do not do good work, said Mr. Ashbee, when they are overworked, but they do their best work when they work long hours for the love of it. The mason was the spoiled child of the Middle Ages. He worked for his order and for his God. There was no fight for subsistence; that was found for him at the big board of the monastery. There was no struggle against time; if the work were not finished this year it could be done next year.

It was inevitable that this condition of life should have left its mark on character, and produced a definite type of man. The observance of the mason's code of moral duties naturally called forth certain traits; for example, reverence, strength and virility of character, æsthetic sensibility, discipline and the faculty for co-operation with its consequent power of resistance against any attempt on the liberties of his town or his order. Comparing these traits with points of national character at the present day, Mr. Ashbee said that we still appreciated as abstract virtues what we had allowed to slumber in modern life as concrete realities. The institutions of the Middle Ages were moulded in a sense of permanence. There was not the feeling of change, the wonder what would happen next, that was characteristic of our time. A similar crystallising of conditions might call out again some of the old qualities.

Speaking of the men produced under this system, Mr. Ashbee gave, by way of example, some particulars of the life and work of Henry Evelyn, who died in 1400 after being master-mason to Edward III., Richard II. and Edward IV. The tomb of Richard II. and his Queen in Westminster Abbey was by his hand. The buildings of the Charterhouse, what was left of St. Stephen's Chapel, Westminster, and the roof of Westminster Hall—the finest piece of carpentry in the world—were also by him. The Westminster records gave some particulars of Evelyn's life, of payments made to him, &c. In the statement of accounts was this curious item: "Nothing for his dress this year, because he refused to receive it on account of the delay in its delivery," a statement which suggested that the master-mason was not a person to be trifled with, and that he was determined his displeasure at some want of attention should be set down in the Westminster records. But the record of the mediæval workman, for the most part, was a silent one. It was the work that stamped the man. He put everything into his work, and if we wanted to understand him we must look at what he wanted us to understand. In so far as the art of architecture could express human thought, so far did the works of these old masons express the human traits of which the lecturer had spoken.

The lecture was illustrated with a number of lantern slides showing mediæval craftsmen at work and examples of their handicraft.

Bankruptcies.

[Abbreviations: R.O.—receiving order; P.E.—public examination; C.C.—county court; O.R.—official receiver; Adj.—Adjudication.]

DURING THE WEEK ending March 4th twenty-five failures in the building and timber trades in England and Wales were gazetted.

W. BECKWORTH, builder, Whitwick. R.O. Feb. 23rd.
HOOD & KAY, engineers, Leicester. R.O. Feb. 27th.
W. HOOPER, builder, Cricklewood. R.O. Feb. 26th.
F. THORPE, builder, Hastings. Adj. Feb. 13th.
E. A. LEE, builder and joiner, Trimdon Colliery. R.O. Feb. 23rd.

WARD BROTHERS & Co., builders and contractors, Coundon. R.O. Feb. 22nd.
BELL & MAHER, builders and contractors, Prescott. R.O. Feb. 22nd.

S. H. CROSS, plumber and glazier, Heysham. R.O. Feb. 26th.
W. H. ARBER, architect and surveyor, London. Adj. Feb. 25th.

W. CORNEY, builder, Hanwell. R.O. Feb. 23rd. P.E., London Bankruptcy Court, March 30th, at 11.30.
A. E. BOND, builder, Great Yarmouth. P.E., Yarmouth Town Hall, March 29th, at 11.

Current Market Prices.

		£	s.	d.	£	s.	d.
FORAGE.							
Beans	per qr	1	14	0	2	0	0
Clover, best ..	per load	1	0	0	4	7	6
Hay, good ..	do.	3	12	6	4	0	0
Sainfoin mixture ..	do.	3	12	6	4	2	6
Straw	do.	1	10	0	2	0	0

		£	s.	d.	£	s.	d.
OILS AND PAINTS.							
Castor Oil, French ..	per cwt.	1	0	5	—	—	—
Colza Oil, English ..	do.	1	3	6	—	—	—
Copperas	per ton	2	0	0	—	—	—
Lard Oil	per cwt.	2	15	0	2	17	0
Lead, white, ground, car-							
bonate	do.	1	4	10	—	—	—
Do. red	do.	1	0	4½	—	—	—
Linseed Oil, barrels ..	do.	0	17	3	—	—	—
Petroleum, American ..	per gal.	0	0	7½	0	0	7½
Do. Russian ..	do.	0	0	5½	0	0	7½
Pitch	per barrel	0	8	0	—	—	—
Shellac, orange	per cwt.	10	0	0	10	5	0
Soda, crystals	per ton	3	2	6	3	5	0
Tallow, Town	per cwt.	1	6	6	1	6	9
Tar, Stockholm	per barrel	1	2	0	—	—	—
Turpentine	per cwt.	2	2	6	—	—	—

		£	s.	d.	£	s.	d.
METALS.							
Copper, sheet, strong ..	per ton	70	0	0	—	—	—
Iron, Staffs, bar	do.	6	0	0	8	10	0
Do. Galvanised Corru-							
gated sheet	do.	10	7	6	10	10	0
Lead, pig, Soft Foreign ..	do.	12	0	0	12	1	3
Do. do. English common							
brands	do.	12	5	0	12	7	6
Do. sheet English 3lb. per							
sq. ft. and upwards ..	do.	14	0	0	—	—	—
Do. pipe	do.	15	0	0	—	—	—
Nails, cut clasp, 3in. to 6in.	do.	9	5	0	—	—	—
Do. floor brads	do.	9	0	0	—	—	—
Steel, Staffs, Girders and							
Angles	do.	5	10	0	6	5	0
Do. do. Mild bars	do.	6	0	0	6	5	0
Tin, Foreign	do.	123	12	6	124	2	6
Do. English ingots	do.	125	10	0	127	10	0
Zinc, sheets, Silesian ..	do.	24	5	0	—	—	—
Do. do. Vieille Montaigne							
do.	do.	24	10	0	—	—	—
Do. Spelter	do.	22	5	0	22	10	0

		£	s.	d.	£	s.	d.
TIMBER.							
SOFT WOODS.							
Fir, Dantzic and Memel	per load	1	13	0	3	0	0
Pine, Quebec, Yellow ..	do.	5	5	0	6	5	0
Do. Pitch	do.	2	11	0	2	16	0
Laths, log, Dantzic ..	per fath.	4	10	0	5	10	0
Do. Norrköping	per bundle	0	0	7½	—	—	—
Deals, Jacobstad, White,							
Unsorted, 3x9 ..	per std.	8	10	0	—	—	—
Do. do. 3x8 ..	do.	7	15	0	—	—	—
Do. Blankaholm, Yellow,							
2nd, 4x8	do.	9	0	0	9	5	0
Do. do. 4x7	do.	8	5	0	—	—	—
Do. Rafso, Yellow, 2nd,							
3x7	do.	11	5	0	11	10	0
Do. Soroka, Yellow, 2nd,							
3x9	do.	14	0	0	15	15	0
Do. do. 3rd, 3x9 ..	do.	12	5	0	—	—	—
Do. Archangel, Yellow,							
2nd, 3x7	do.	12	0	0	12	5	0
Do. do. 3rd, 3x9 ..	do.	12	5	0	12	15	0
Do. do. 3x8	do.	10	0	0	—	—	—
Do. do. White, 1st,							
3x11	do.	13	10	0	13	15	0
Do. Kereh, Yellow, 2nd,							
3x11	do.	16	5	0	—	—	—
Do. do. 3x9	do.	14	10	0	15	0	0
Do. Petschora, Yellow,							
3rd, 3x11	do.	11	5	0	—	—	—
Do. do. 3x9	do.	10	10	0	11	0	0
Do. Sulina, Bosnian,							
White, 1st & 2nd, 4x12	do.	7	15	0	—	—	—
Do. do. 3x11	do.	7	15	0	8	0	0
Do. Raumo, Yellow, un-							
sorted, 3x9	do.	7	15	0	8	10	0
Do. Rimouski Spruce,							
Unsorted, 3x9x12	do.	8	15	0	—	—	—
Do. St. Petersburg, Yell,							
2nd, 3x11	do.	9	0	0	9	10	0
Do. Marsouls (River St.							
Lawrence) Bright							
Spruce, Unsorted,							
1st, 2nd and 3rd,							
3x9x12	do.	8	5	0	8	10	0
Do. Montreal, Red Pine,							
2nd, 3x7	do.	9	5	0	—	—	—
Do. do. 3rd, do. do.							
do. do.	do.	7	10	0	—	—	—
Do. Quebec (Three Rivers),							
Yellow Pine, 4th,							
3x9x12ft.	do.	9	5	0	—	—	—
Do. do. 3x8x12ft. ..	do.	8	10	0	—	—	—
Do. do. 3x7x12ft. ..	do.	8	5	0	—	—	—
Do. do. 3x11x12ft.							
and 13ft.	do.	9	15	0	10	0	0
Do. do. Spruce, 3rd,							
3x7	do.	7	15	0	—	—	—
Battens, all kinds ..	do.	6	5	0	12	5	0
Scantlings	do.	6	15	0	9	15	0
Flooring Boards rin. pre-							
pared, 1st	per square	0	11	9	0	12	0
Do. 2nd	do.	0	8	0	0	11	0
Do. 3rd, &c.	do.	0	7	9	0	8	6

		£	s.	d.	£	s.	d.
HARD WOODS.							
Ash, Quebec	per load	3	12	6	—	—	—
Birch, Miranichi, Planks,							
3x5 to 16in. ..	per cu. ft.	0	0	11½	—	—	—
Box, Turkey	per ton	15	0	0	20	0	0
Cedar, Cuba	per ft. sup.	0	0	4½	—	—	—
Do. Honduras	do.	0	0	4½	—	—	—
Do. Tobasco	do.	0	0	5½	—	—	—
Elm, Quebec	per load	4	2	6	—	—	—
Mahogany, Average Price							
for Cargo, Honduras ..	per ft. sup.	0	0	6 1/16	—	—	—
Do. African	do.	0	0	4½	—	—	—

Complete List of Contracts Open.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
BUILDING:			
Mar. 10	Cambrai, Blyth, Northumberland—Mechanics' Institute, &c.		T. Tulip, Architect, Whinney Hill, Choppington.
10	Kirkmichael, Scotland—Cottage	Rural District Council	P. Stewart, Farmer, Boreland, Kirkmichael.
10	Meath, Ireland—Two Cottages	Mrs. Soames	T. Dowdall, Clerk, Meath, Ireland.
10	St. James Deeping, Lincs—Three Cottages	Corporation	Horse and Groom, St. James Deeping.
10	Birmingham—Cement, Lime, &c.	Corporation	G. H. Barber, City Gas Offices, Council House, Birmingham.
10	Carlisle—Bricks, Tiles, &c.	Corporation	H. C. Marks, 36 Fisher Street, Carlisle.
10	Alvaston, near Nantwich—Hospital	Joint Hospital Board	C. E. Davenport, Architect, Nantwich.
10	Withington, Lanes—Lime and Cement	Urban District Council	A. H. Mountain, Surveyor, Town Hall, Withington, Manchester.
11	Carmarthen—Bridge	Rural District Council	R. Browne, 7 Hall Street, Carmarthen.
11	Walton-le-Dale, Lanes—Church Works		Vicar, The Vicarage, Walton-le-Dale, Preston.
11	Cleaton Moor, Cumberland—Six Houses, &c.		M. W. Coulthard, Cleaton Moor.
11	Dewsbury—Seven Houses		J. Kirk & Sons, Architects, Dewsbury.
11	Fairwater, near Cardiff—Two Cottages	Urban District Council	W. B. Rees, 37 St. Mary Street, Cardiff.
11	East Ham—Cement, Lime and Bricks	City Council	C. E. Wilson, Clerk, Town Hall, East Ham.
11	Exeter—Bricks, Cement and Lime	Trustees	City Surveyor, 7 Southernhay West, Exeter.
12	Bedwas, Mon.—Twenty-seven Houses	Osborne Building Club No. 2	G. L. Watkins, Architect, Station Terrace, Caerphilly.
12	Blackwood, Mon.—Fifty-five Houses	Corporation	James & Morgan, Architects, Charles Street Chambers, Cardiff.
12	Smethwick—Lavatories	Town Council	C. J. F. Allin, Borough Surveyor, Town Hall, Smethwick.
12	Tiverton—Buildings		J. Siddalls, Borough Engineer, Town Hall, Tiverton.
12	Wrexham—Five Houses		H. B. Martin, 8 Penybryn, Wrexham.
12	Haslingden, Lanes—Cement	Town Council	J. S. Green, Borough Surveyor, Haslingden, Lanes.
12	Middleton-in-Teesdale—Renovation of Chapel		Rev. J. Strong, The Manse, Middleton-in-Teesdale.
12	Wrexham—Lime	Town Council	Borough Surveyor, Wrexham.
14	Romford—Shed	Rural District Council	E. G. Boden, Council's Surveyor, Victoria Chambers, Romford.
14	Belfast—Extension of Warehouses, &c.	Great Northern Ry. Co. (Ireland)	W. H. Mills, Engineer, Aniens Street Terminus, Dublin.
14	Fastbourne—Cement and Bricks	Town Council	D. J. Bowe, Borough Surveyor, Town Hall, Eastbourne.
14	Buncrana, Ireland—Hall		E. J. Toye, 20 Great James Street, Londonderry.
14	Cleethorpes, Lincs—Fire Station	Urban District Council	E. Rushton, Surveyor, Poplar Road, Cleethorpes.
14	Rhyl, Wales—Pavilion	Royal National Eisteddfod	Darbyshire & Smith, 17 Brazenose Street, Manchester.
14	Sheffield—Conveniences	Corporation	C. F. Wike, City Surveyor, Town Hall, Sheffield.
14	Waltham—tow—Stables	Urban District Council	G. W. Holmes, Engineer, Town Hall, Walthamstow.
14	Basford—Sanitary Conveniences, &c.	Nottingham Corporation	F. B. Lewis, City Architect, Guildhall, Nottingham.
14	Brighton—Converter House, &c.	Corporation	F. J. Tillstone, Town Clerk, Town Hall, Brighton.
15	Burtonport, Ireland—Additions to Hotel	J. Sweeney	E. J. Toye, 20 Great James Street, Londonderry.
15	Southampton—Pavilion	Corporation	J. A. Crowther, Borough Engineer, Southampton.
15	Chippenham—Enlargement of Sorting Office	Commissioners of H.M. Works, &c.	Secretary, H.M. Office of Works, Storey's Gate, London, S.W.
15	Rotherham—Alterations to Cookery Centres	Education Committee	J. Platts, Architect, High Street, Rotherham.
15	Belfast—Bricks and Lime	Works Committee	Superintendent, Works Office, Townhall Street, Belfast.
16	Lichfield—Enlargement of Post Office	Commissioners of H.M. Works, &c.	Secretary, H.M. Office of Works, Storey's Gate, London, S.W.
16	Audenshaw, Lanes—Chapel, &c.	Urban District Council	T. George & Son, Architects, Stamford Street, Ashton-under-Lyne.
16	Edgware, Middlesex—Latrines	Guardians	Hudson & Hunt, 40 Upper Baker Street, N.W.
16	Middleton, Lanes—Alterations, &c., to Inn	Corporation	W. Wellburn, Borough Surveyor, Town Hall, Middleton.
16	Sedgefield, Durham—Bathroom, &c.		J. Stones, Surveyor, Sedgefield.
17	Reading—Lime and Cement	Corporation	J. Bowen, Borough Surveyor, Town Hall, Reading.
17	London, N.—Sorting Office	Commissioners of H.M. Works, &c.	Secretary, H.M. Office of Works, Storey's Gate, London, S.W.
17	Surbiton—Baptist Chapel		A. Mason, Architect, Broughton Chambers, Surbiton.
17	Great Float, near Birkenhead—Roof Boarding, &c.	Wallasey U.D.C.	J. H. Crowther, Engineer, Great Float, near Birkenhead.
17	Dundalk—Additions to Church		W. H. Byrne & Son, 20 Suffolk Street, Dublin.
18	Wimbledon—Cement and Lime	Urban District Council	Surveyor, Council Offices, Wimbledon.
18	Branksome, Dorset—Fitting-up Library, &c.		S. J. Newman, Architect, Council Buildings, Branksome.
18	Sea View, Isle of Wight—Coastguard Buildings	Admiralty	Superintending Engineer, H. M. Dockyard, Portsmouth.
18	Weston-super-Mare—Warehouse	Leland Brothers & Parham	H. Price & W. Jane, Architects, Waterloo Pl., Weston-super-Mare.
18	Alderney, Channel Islands—Signal Station	Admiralty	Superintending Civil Engineer, H.M. Breakwater Wrks., Portland.
19	Oulton, Lowestoft—Fire-escape Staircases	Guardians	R. S. Cockrill, Architect, Crossley House, Lowestoft.
21	Antrim, Ireland—Schools		W. J. Fennell, 2 Wellington Place, Belfast.
21	West Heath, near Birmingham—Pavilion	King's Norton and Northfield U.D.C.	A. W. Cross, 23 Valentine Road, King's Heath.
ENGINEERING:			
Mar. 10	Belfast—Stoves	Gas Committee	Manager, Gasworks, Ormeau Road, Belfast.
10	Manchester—Feeder Cable	Electricity Committee	F. E. Hughes, Secretary, Elec. Dept., Town Hall, Manchester.
10	Manchester—Wiring Alterations	Electricity Committee	F. E. Hughes, Secretary, Elec. Dept., Town Hall, Manchester.
12	Tweedmouth—Borehole	Sanitary Authority	R. Dickinson, Borough Surveyor, Berwick-upon-Tweed.
12	Glasgow—Filter Beds	Corporation	J. R. Sutherland, 45 John Street, Glasgow.
12	Ballinasloe, Ireland—Electric Motors	Dist. Lunatic Asylum Committee	J. Smith, Engineer, Ballinasloe.
12	South Shields—Tramways Lease	Corporation	J. M. Hayton, Town Clerk, Court Buildings, South Shields.
12	Wrexham—Engine Stores	Town Council	Borough Electrical Engineer, Wrexham.
14	Kilmarnock—Electric Plant	Corporation	Kennedy & Jenkin, 17 Victoria Street, S.W.
14	London, E.—Electric Plant	Stepney Borough Council	A. Wright, 27 Osborn Street, Whitechapel.
14	Aston Manor, near Birmingham—Boilers, &c.	Corporation	T. J. Ballard, Engr., Electricity Works, Chester St., Aston Manor.
15	Avon, Scotland—Pier, &c.		J. Frazer, Civil Engineer, Inverness.
15	Cavan, Ireland—Road Roller	County Council	W. Finlay, Sec., Cavan County Council, Court House, Cavan.
15	Fauldhouse, Scotland—Reservoir, &c.	Bathgate District Committee	P. C. Hart, 134 St. Vincent Street, Glasgow.
15	London, S.E.—Calorifiers, &c.	Deptford Borough Council	V. Orchard, 20 Tanner's Hill, Deptford, S.E.
15	Manchester—Boiler	Corporation	City Architect, Town Hall, Manchester.
15	New Mill, near Huddersfield—Pipelining	Urban District Council	C. H. Marriott, Son & Shaw, Engrs., Church St. Chbrs., Dewsbury.
16	Gainsborough—Telephones, &c.	Urban District Council	R. W. Fraser, Electrical Engineer, Council Offices, Gainsborough.
16	Egremont—Alternating Current Transformers	Wallasey Urban District Council	J. A. Crowther, Engineer, Sea View Road, Liscard.
17	Londonderry—Electric Plant, &c.		M. V. Macrory, Consulting Engineer, Strand, Londonderry.
17	Londonderry—Heating	Dist. Lunatic Asylum Committee	M. A. Robinson, Engineer, Richmond Street, Londonderry.
17	Great Float, near Birkenhead—Gas Purifiers	Wallasey Urban District Council	I. H. Crowther, Engineer, Great Float, near Birkenhead.
17	Christchurch, New Zealand—Electrical Tramways	Government of New Zealand	Agent-General for New Zealand, Victoria Street, London.
18	Branksome—Heating Apparatus		S. J. Newman, Architect, Council Buildings, Branksome.
18	Kettering—Valves, &c.	Urban District Council	T. R. Smith, Engineer, Market Place, Kettering.
18	Croydon—Refuse Destructor	Borough Council	G. F. Carter, Borough Engineer, Town Hall, Croydon.
19	Harrogate—Sewage Purification Works	Corporation	E. W. Dixon, 5 Prospect Crescent, Harrogate.
19	Rugby—Tank, &c.	Urban District Council	D. G. Macdonald, Surveyor, Rugby.
IRON AND STEEL:			
Mar. 10	Tamworth—Ironmongery	Corporation	F. E. G. Bradshaw, 36 Aldergate, Tamworth.
10	Birmingham—Stores	Corporation	G. H. Barber, Sec., City Gas Offices, Council House, Birmingham.
10	Carlisle—Stores	Corporation	H. C. Marks, 36 Fisher Street, Carlisle.
11	Exeter—Stores	City Council	City Engineer, 7 Southernhay West, Exeter.
12	Wrexham—Stores	Town Council	Borough Electrical Engineer, Wrexham.
12	Haslingden, Lanes—Iron Castings	Town Council	J. S. Green, Borough Surveyor, Haslingden, Lanes.
14	Eastbourne—Ironmongery	Town Council	D. J. Bowe, Borough Surveyor, Town Hall, Eastbourne.
14	Edinburgh—Frames and Covers	Corporation	Resident Engineer, 5 Dewar Place, Edinburgh.
15	Torquay—Fire Hydrants, &c.	Town Council	Borough Engineer, Torquay.
15	Belfast—Iron and Steel	Works Committee	Superintendent of Works, Town Hall Street, Belfast.
15	New Mill, near Huddersfield—Pipes, &c.	Urban District Council	C. H. Marriott, Son & Shaw, Church Street Chambers, Dewsbury.
16	Colchester—Ironmongery, Castings	Elec. Light and Power Committee	A. R. Sillar, 36 Stanweir Street, Colchester.
16	Pentre, Glamorgan—Stores	Rhondda Urban District Council	O. Thomas, Engineer, Gas and Water Offices, Pentre, R.S.O., Glam.
18	Wimbledon—Tools, &c.	Urban District Council	Engineer, Council Offices, Wimbledon.
PAINTING AND PLUMBING:			
Mar. 10	Birmingham—Paint	Corporation	G. H. Barber, Sec., City Gas Offices, Council House, Birmingham.
10	Carlisle—Paints, Oils and Varnishes	Corporation	H. C. Marks, 36 Fisher Street, Carlisle.
11	Exeter—Plumbers' Material and Labour	City Council	City Surveyor, 7 Southernhay West, Exeter.
11	East Ham—Oils, Colours, Painters' Brushes, &c.	Urban District Council	C. E. Wilson, Clerk, Town Hall, East Ham.
12	Wrexham—Oils and Paints	Town Council	Borough Electrical Engineer, Wrexham.
12	Haslingden, Lanes—Oils	Town Council	J. S. Green, Borough Surveyor, Haslingden, Lanes.
14	Eastbourne—Oils, Colours, &c.	Town Council	D. J. Bowe, Borough Surveyor, Town Hall, Eastbourne.
15	Belfast—Paints and Oils	Works Committee	Superintendent of Works, Town Hall Street, Belfast.
16	Pentre, Glamorgan—Oils and Paints	Rhondda Urban District Council	O. Thomas, Engineer, Gas and Water Offices, Pentre, R.S.O., Glam.
17	Reading—Oils, Paints, &c.	Corporation	J. Bowen, Borough Surveyor, Town Hall, Reading.
18	Wimbledon—Oils and Paints	Urban District Council	Engineer, Council Offices, Wimbledon.

Complete List of Contracts Open—continued.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
ROADS AND CARTAGE:			
Mar. 10	Tadcaster—Materials, &c.	Rural District Council	T. Scott, Council's Surveyor, Aberford, near Leeds.
" 10	Tamworth—Granite	Corporation	F. E. G. Bradshaw, 36 Aldergate, Tamworth.
" 10	Withington, Lancs—Materials	Urban District Council	A. H. Mountain, Surveyor, Town Hall, Withington, Manchester.
" 10	Ealing, W.—Private Street Improvements	Town Council	C. Jones, Borough Engineer, Town Hall, Ealing, W.
" 10	Fenton, Staffs—Granite	Urban District Council	S. A. Goodall, Surveyor, Town Hall, Fenton.
" 10	Havant, Hants—Roads, &c.	Major Stubington	A. E. Stallard, Surveyor, West Street, Havant.
" 10	Poole, Dorset—Street Works	Town Council	J. Elford, Borough Surveyor, Poole.
" 10	Carlisle—Materials	Corporation	H. C. Marks, 36 Fisher Street, Carlisle.
" 11	East Ham—Materials	Urban District Council	C. E. Wilson, Clerk, Town Hall, East Ham.
" 11	Exeter—Materials	City Council	City Surveyor, 7 Southernhay West, Exeter.
" 11	Flaxton, Yorks—Whinstone, &c.	Rural District Council	J. Peters, 4 New Street, York.
" 12	Braithwaite, near Keswick—Widening Road	Cockermouth R.D.C.	J. B. Wilson, 11 Main Street, Cockermouth.
" 12	Burnley, Lancs—Materials	Rural District Council	S. Edmondson, 18 Nicholas Street, Burnley.
" 12	Kiveton Park, Sheffield—Slag	Rural District Council	J. P. Evans, Survr., Council Offices, Kiveton Park Sta., Sheffield.
" 12	Haslingden, Lancs—Materials	Town Council	J. S. Green, Borough Surveyor, Haslingden, Lancs.
" 12	Wrexham—Materials	Town Council	Borough Surveyor, Wrexham.
" 12	Alnwick—Materials, &c.	Rural District Council	District Surveyor, Fenkle Street, Alnwick.
" 12	Coventry—Materials, &c.	General Works Committee	J. E. Swindlehurst City Surveyor, St Mary's Hall, Coventry.
" 12	Okehampton, Devon—Road	Rural District Council	S. Hooper, District Surveyor, Biddicombe, Hatherleigh.
" 12	Stafford—Slag	Rural District Council	W. Morgan, 4 Martin Street, Stafford.
" 14	Chester-le-Street, Durham—Materials, &c.	Rural District Council	G. W. Ayton, Highways Surveyor's Office, Chester-le-Street.
" 14	Hull—Whinstone, &c.	Scutcoates R.D.C.	A. Greaves, Surveyor, Hessle.
" 14	Lichfield, Staffs—Granite	Rural District Council	C. O. Rawstron, District Surveyor, Lichfield.
" 14	London, N.—Road Works	Hornsey Town Council	E. J. Lovegrove, Municipal Offices, Southwood Lane Highgate, N.
" 14	Milton-next-Sittingbourne—Granite	Urban District Council	W. R. Warlow, Town Hall, Milton.
" 14	Middlesex—Road Widening	County Council	H. T. Wakelam, County Engr., Middlesex Guildhall, Westminster.
" 14	Eastbourne—Materials	Town Council	D. J. Bowe, Borough Surveyor, Town Hall, Eastbourne.
" 14	Eccles, Lancs—Road Materials, &c.	Corporation	T. S. Picton, Borough Surveyor, Eccles, Lancs.
" 15	Felixstowe—Concrete Paving	Walton U.D.C.	J. B. Jennings, Clerk, Town Hall, Felixstowe.
" 15	St. Helen's, Lancs—Road Materials, &c.	Blyth and Cuckney R.D.C.	G. J. C. Broom, Borough Surveyor, Town Hall, St. Helens, Lancs.
" 15	Workshop—Slag	Corporation	F. Hopkinson, 40 Bridge Street, Workshop.
" 15	Henley-on-Thames—Two Roads	Tottenham U.D.C.	R. Pratt, Borough Surveyor, Henley-on-Thames.
" 15	London, N.—Making-up	Urban District Council	W. H. Prescott, 712 High Road, Tottenham.
" 16	Bilston, Staffs—Stone	Urban District Council	J. P. Wakeford, Surveyor, Town Hall, Bilston.
" 16	Hampton, Middlesex—Road Materials, &c.	Urban District Council	S. H. Chambers, Surveyor, Hampton, Middlesex.
" 16	London, S.W.—Making-up	Fulham Borough Council	F. Wood, Borough Surveyor, Town Hall, Fulham, S.W.
" 16	Tutbury, Burton-on-Trent—Materials	Rural District Council	H. S. Tebbitt, 320 Shobnall Street, Burton-on-Trent.
" 16	Uckfield, Sussex—Materials	Rural District Council	F. Holman, 86 High Street, Lewes.
" 16	Wimlington, near March—Granite, &c.	Rural District Council	A. W. Broker, Surveyor, Wimlington, near March.
" 16	Newbury—Highway Repairs	Rural District Council	H. S. Talbot, District Surveyor, Cold Ash, Newbury.
" 17	Reading—Materials	Corporation	J. Bowen, Borough Surveyor, Town Hall, Reading.
" 18	Wimbledon—Granite	Urban District Council	Surveyor, Council Offices, Wimbledon.
" 18	Abergavenny—Stone, &c.	Rural District Council	J. Gill, 4 Brecon Road, Abergavenny.
" 18	Hull—Stone	Corporation	A. E. White, City Engineer, Town Hall, Hull.
" 18	Moss Side, Manchester—Materials	Urban District Council	H. B. Longley, Engineer, Council Offices, Moss Side.
" 19	Newport, Mon.—Road	Urban District Council	I. Rees, Corn Exchange Chambers, Newport, Mon.
" 19	Rothwell, Yorks—Materials	Urban District Council	J. T. Pears, Surveyor, Council Offices, Rothwell, near Leeds.
" 19	Rye, Sussex—Materials, &c.	Rural District Council	H. J. Elliott, Highway Surveyor, Winchelsea, Sussex.
" 22	Grangetown, Yorks—Road Works	Eston U.D.C.	C. McDermid, District Surveyor, Council Offices, Grangetown R.S.O., Yorks.
" 22	Lowestoft—Materials	Mutford & Lothingland R.D.C.	S. G. Bloy, Surveyor, Oulton Broad, Lowestoft.
" 23	Walsall—Materials	Rural District Council	F. W. Mager, District Surveyor, Rushall, near Walsall.
" 28	Little Hulton, Lancs—Materials	Urban District Council	J. H. Heyes, Clerk, Council Offices, Little Hulton.
SANITARY:			
Mar. 10	Withington, Lancs—Sewerage Pipes	Urban District Council	A. H. Mountain, Surveyor, Town Hall, Withington, Manchester.
" 10	Dukinfield—Sewerage Works	Joint Sewerage Board	J. P. Wilkinson, 301 Cathedral Street, Manchester.
" 11	Exeter—Stoneware Pipes	City Council	City Surveyor, 7 Southernhay West, Exeter.
" 11	East Ham—Stoneware Pipes, &c.	Urban District Council	C. E. Wilson, Clerk, Town Hall, East Ham.
" 12	Wrexham—Sanitary Materials	Town Council	Borough Surveyor, Wrexham.
" 12	Mitcham—Scavenging, &c.	Parochial Committee	E. J. Gowen, Clerk, District Council Offices, Town Hall, Croydon.
" 12	Haslingden, Lancs—Disinfectants, &c.	Town Council	J. S. Green, Borough Surveyor, Haslingden, Lancs.
" 12	Eccles, Lancs—Disinfectants	Corporation	C. W. Laskey, Town Hall, Eccles.
" 12	Heywood, Lancs—Sewer	Town Council	J. A. Settle, Borough Engineer, Heywood.
" 12	Ardrossan, Scotland—Sewers, &c.	Parish Council	C. J. Shaw, Burgh Surveyor, Ardrossan.
" 14	Braughing, Herts—Sewer, &c.	Renfrew County Council	E. T. Watts, Surveyor, Thorley, Bishop's Stortford.
" 14	Glasgow—Sewers	Education Committee	W. R. Copland, 146 West Regent Street, Glasgow.
" 14	Hastings—Drainage, &c. Works	Urban District Council	C. A. Pigott, Architect, Saxon Chbrs., London Rd., St. Leonards.
" 14	Leigh-on-Sea, Essex—Removal of Refuse	Joint Sewerage Board	A. J. Arthy, Clerk, Leigh-on-Sea.
" 14	Shepley, Yorks—Sewer	Town Council	T. A. Murray, Engineer, Independent Buildings, Fargate, Sheffield.
" 14	Eastbourne—Stoneware Pipes	Works Committee	D. J. Bowe, Borough Surveyor, Town Hall, Eastbourne.
" 15	Belfast—Sewer Pipes	Westminster City Council	Superintendent of Works, Townhall Street, Belfast.
" 15	London, S.W.—Sewer Works	Corporation	Works Dept., Westminster City Hall, Charing Cross, Rd., W.C.
" 16	Kendal—Removal of Refuse	Urban District Council	J. W. Pooley, Inspector of Nuisances, Town Hall, Kendal.
" 17	Reading—Stoneware Pipes	Corporation	J. Bowen, Borough Surveyor, Town Hall, Reading.
" 18	Moss Side, Manchester—Lime Precipitants, &c.	Rural District Council	H. B. Longley, Engineer, Council Offices, Moss Side.
" 19	Tadcaster, Yorks—Sewerage Works	Sanitary Committee	Martin & Fenwick, Park Place, Leeds.
" 22	Todmorden, Lancs—Sewerage Works	Corporation	Borough Surveyor, Market Ground, Todmorden, Lancs.
" 23	Birkenhead—Sewer	Rural District Council	C. Brownridge, Borough Surveyor, Town Hall, Birkenhead.
" 23	Walsall—Stoneware Pipes	Urban District Council	F. W. Mager, District Surveyor, Rushall, near Walsall.
" 26	Little Hulton, Lancs—Stoneware Pipes	Urban District Council	J. H. Heyes, Clerk, Council Offices, Little Hulton.
" 29	Twickenham—Refuse Collection	Urban District Council	H. J. Saunders, Clerk, Town Hall, Twickenham.
" 30	Bawtry, Yorks—Sewerage and Sewage-Disposal Works	Doncaster R.D.C.	D. Ballour & Son, 3 St. Nicholas Buildings, Newcastle-on-Tyne.
" 31	Chailey, Sussex—Sewerage Works	Rural District Council	Powell & Co., Estate Offices, Lewes.
TIMBER:			
Mar. 10	Carlisle—Timber	Corporation	H. C. Marks, 36 Fisher Street, Carlisle.
" 10	Birmingham—Timber	Corporation	G. H. Barber, Sec., City Gas Offices, Council House, Birmingham.
" 11	Exeter—Timber	City Council	City Surveyor, 7 Southernhay West, Exeter.
" 12	Haslingden, Lancs—Timber	Town Council	J. S. Green, Borough Surveyor, Haslingden, Lancs.
" 14	Eastbourne—Timber	Town Council	D. J. Bowe, Borough Surveyor, Town Hall, Eastbourne.
" 15	Belfast—Timber	Works Committee	Superintendent of Works, Townhall Street, Belfast.
" 18	Wimbledon—Timber	Urban District Council	Surveyor, Council Offices, Wimbledon.

List of Competitions Open.

DATE OF DELIVERY.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	DEPOSIT REQUIRED FOR CONDITIONS, &c.	BY WHOM ADVERTISED.
Mar. 31	Tipton—Free Library Buildings and Town Hall	£50, £20, £10.	£2 2s.	J. W. Waring, Clerk, Public Offices, Owen Street, Tipton.
" 31	St. Helens—Two Branch Public Libraries	£20, £40.	£1 1s.	W. H. Andrew, Town Clerk, Town Hall, St. Helens.
" 31	Vienna—Machinery to Lift Boats on Canal	100,000, 75,000 & 50,000 kronen.		Austro-Hungarian Consulate-General, 22 Laurence Pountney Lane, E.C.
April 5	Birmingham—Three Public Libraries		£1 1s.	A. W. Cross, 23 Valatine Road, King's Heath, near Birmingham.
" 6	Perth—Hospital	£31 10s., £21, £10 10s.		J. Begg, Town Clerk, Perth.
" 8	Malvern—Library	£30, £20, £10.		H. L. Whitley, Clerk, Council Offices, Malvern.
" 30	Newcastle-upon-Tyne—Grammar School	£100, £50, £25.	£1 1s.	H. J. Criddle, 2 Collingwood Street, Newcastle-upon-Tyne.
May 9	Barnet—Hospital			C. D. Byheld, 16 High Street, Barnet.

Tenders.

Information from accredited sources should be sent to "The Editor" at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders should not be accepted unless they contain the name of the Architect or Surveyor for the work.
Addressed postcards on which lists of tenders may be stated will be sent post free on application to the Manager, BUILDERS' JOURNAL, 6, Great New Street, Fetter Lane, E.C.

Billerica (Essex).—For providing and laying 4.118 lineal yards of 3in. and 867 lineal yards of 2in. cast-iron water-mains, together with hydrants, sluice-valves, stand-pipes, and all work in connection therewith, at North Benfleet and Bowers Gifford, Essex, for the Billericay R.D.C. Mr. R. J. W. Layland, surveyor, Billericay:—
W. T. Pearson, Southend-on-Sea .. £1,850 0 0
Thompson & Wilkinson, Chipping Ongar, Essex .. 1,203 11 10
Terry Building Co., Cheshunt, Herts .. 1,200 0 0
Wilson, Berder & Co., Romford .. 1,187 0 0
J. Jackson, Forest Gate, E. .. 1,185 18 8
F. J. Glasscock, North Benfleet, Essex .. 1,146 14 5
J. W. Dean, Ltd., Chancery Lane, London, W.C. .. 1,080 8 11
Farrow & Sons,* Chelmsford .. 1,037 13 8
* Accepted. [Engineer's estimate, £1,103.]

Chesterfield.—For the erection of United Methodist Free Church Schools, St. John's Road, Newbold Moor, near Chesterfield. Mr. Willis Glossop, architect, 20, Cavendish Street, Chesterfield:—
Richard Porter, Chesterfield .. £2,000 0 0
John Wright, Barlow .. 1,989 0 0
Collis & Sons, Chesterfield .. 1,985 18 0
Lee & Kirk, Alfreton, Chesterfield .. 1,880 0 0
James Stubbins, Whittington .. 1,830 0 0
* Accepted.

Croydon.—For making-up the following roads:—Bronson, Dorian, Dupont and Sydney, Merton, for the Croydon R.D.C. Mr. R. M. Chart, surveyor, Town Hall, Croydon:—
Harvey Brothers .. £3,464
T. Adams .. 3,350
Free & Sons .. 3,124
E. Iles,* Mitcham .. 3,011
* Accepted.

Horsham.—For the execution of works of sewerage in the Roffey and Little Haven districts, Horsham, for the Horsham U.D.C.:—
T. W. Pedrette, London, N. .. £4,358 0 0
J. Coker, Halling, Rochester .. 4,216 9 4
H. Lindfield & Son, Horsham .. 4,070 0 0
Davis, Ball & Co., Bromley, Kent .. 3,500 0 0
H. Roberts, Colwyn Bay .. 2,975 0 0
Potter Brothers, Horsham .. 2,960 0 0
C. Castle & Co., Carlisle, Margate .. 2,930 0 0
Streeter & Todhunter, Godalming .. 2,724 0 0
J. F. Price, Nottingham .. 2,690 0 0
J. A. East, Worthing .. 2,680 0 0
A. Dixon & Co., Bradford .. 2,603 0 0
C. W. Killingback & Co., Camden Town, London, N.W. .. 2,577 0 0
R. Cook & Sons, Crawley .. 2,461 0 0
J. W. Dean, Ltd., Chancery Lane, London, W.C. .. 2,495 9 0
G. G. Rayner, 4, Elmwood Road, West Croydon .. 2,303 0 0
W. H. Wheeler, 235, Blackfriars Road, S.E. .. 2,250 0 0
J. G. Pickard, Turner's Hill, Sussex .. 2,093 0 0
Peerless Dennis & Co.,* Eastbourne .. 2,047 0 0
* Accepted.

Kildare (Ireland).—For the erection of an hotel, for Miss E. Talbot. Mr. F. Bergin, architect, 36, Westmoreland Street, Dublin:—
Lynch & Egan .. £3,450 0 0
Mackey & Son .. 3,434 0 0
Payne Brothers .. 3,411 12 5
J. P. Pile .. 3,350 0 0
D. & G. Carbery .. 3,305 0 0
J. Pemberton & Son .. 3,240 0 0
J. Donovan .. 3,200 0 0
P. Hanway .. 3,150 0 0
B. Pryne .. 2,960 0 0
J. Reid,* Malahide .. 2,700 0 0
* Accepted.

London, N.W.—For the erection of a residence, for Mr. W. Fowler, on Wills' Road, Mill Hill, N.W. Messrs. Bennett & Richardson, architects and surveyors, 2, Broadway, Finchley, N. Quantities by the architects:—
Mattock Brothers .. £2,290
F. Gough & Co. .. 2,154
G. Godson & Sons .. 2,150
J. Bentley .. 2,126
V. Tout .. 2,091
J. Phoenix .. 2,091

London, N.—For the erection of a residence, Freston Tower, Hendon Avenue, Finchley, N., for Mr. Jesse Hawes. Messrs. Bennett & Richardson, architects and surveyors, 2, Broadway, Finchley, N. Quantities by the architects:—
J. Phoenix .. £3,690
C. J. Newby & Brothers .. 3,657
H. Roffey .. 3,487
Colls & Sons .. 3,426
J. Grover & Son .. 3,390
W. Tout .. 3,250
Mattock Brothers .. 3,190
Patman & Fotheringham, Ltd.* .. 3,173
W. R. Williams .. 3,145
G. Godson & Sons .. 3,064
W. Lawrence & Son .. 2,934
Edwards & Medway† .. 2,970
* Accepted. † Too late.

London, W.C.—For the erection of new business premises in Drury Lane and Kean Street, W.C. Mr. H. Phelps Drew, architect, 33, King Street, Covent Garden. Quantities by Mr. J. Kookwood, 25, Bedford Row, W.C.:—
Turtle & Appleton .. £7,680
T. L. Green .. 7,387
Patman & Fotheringham .. 7,273
Higgs & Hill .. 7,191
McCormick & Sons .. 6,930
Ashby & Horner* .. 6,904
Hibberd Brothers .. 6,733
* Accepted.

Narborough, near Leicester.—For the erection of the Leicester and Rutland Counties' Asylum, Narborough, near Leicester. Messrs. Everard and Pick, architects, Leicester:—
J. Howe & Co., West Hartlepool .. £239,483 0 0
R. Wilkins & Sons, Bristol .. 232,780 0 0
John Shillitoe & Son, Bury St. Edmunds .. 230,591 4 0
Pethick Brothers, Plymouth .. 229,944 0 0
Foster & Dicksee, Rugby .. 229,666 0 0
J. E. Johnson & Son, Leicester .. 226,990 0 0
Robt. Neill & Sons, Manchester .. 222,200 0 0
Hy. Willcock & Co., Wolverhampton .. 219,750 0 0
J. Chessum & Sons, London, E. .. 218,350 9 0
McCormick & Sons, London, N. .. 217,345 0 0
Haskard, Rudkin & Beck, Leicester .. 216,455 0 0
Armitage & Hodgson, Leeds .. 213,087 0 0
John Bowen & Son, Birmingham .. 210,993 0 0
Hy. Herbert & Sons, Leicester .. 209,975 0 0
S. F. Davidson, Newcastle-on-Tyne .. 209,940 0 0
Wm. Maule & Co., Nottingham .. 209,625 0 0
Harold Arnold & Son, Doncaster .. 207,613 0 0
W. Pattinson & Sons, Westminster, S.W. .. 203,816 0 0
Jas. Wright, Nottingham .. 201,471 0 0
Wm. Brown & Sons, Salford .. 196,903 0 0
I. Hodson & Son, Nottingham .. 196,557 0 0
John Dallow & Sons, Birmingham .. 196,550 0 0
Geo. Longden & Sons, Ltd., Neepsend, Sheffield .. 195,926 12 3
O. Wright & Co., South Wigston, near Leicester .. 193,911 3 2
Thos. Fish & Sons, Nottingham .. 191,537 0 0
J. Farnell & Son, Rugby .. 184,233 0 0
Thos. Rowbotham, Birmingham .. 184,200 0 0
Wm. Moss & Sons,* Ltd., 39, Baxter Gate, Loughborough .. 179,909 0 0
* Accepted.

Shildon (Durham).—For the whole of the various works required in erection of sewage-disposal works, together with caretaker's cottage, adjoining their present sewage farm near Shildon, for the Shildon and East Thickley U.D.C. Mr. C. Heslop, surveyor:—
J. Moore, New Shildon .. £4,213
G. T. Manners, Durham .. 3,673
A. Metcalfe, Dent Street, Shildon .. 3,466

W. & J. Lant, Dixon Terrace, Darlington .. £3,275
B. Firth & Co.,* Holgate Road, York .. 3,044
* Accepted.
Stradbroke (Suffolk).—For the erection of a police-station at Stradbroke, Suffolk, for the East Suffolk County Council. Mr. H. Miller, M.I.C.E., county surveyor, 16, Museum Street, Ipswich:—
Linzell, Newmarket .. £1,222
Skuffham, Eye .. 1,220
Gladwell, Walton-on-the-Naze .. 1,174
McKay, Clacton-on-Sea .. 1,155
Doe, Bungay .. 1,100
Thurman, Walton .. 1,147
Boddy & Son, Norwich .. 1,095
Burgoyne, Ipswich .. 1,051
Plummer, Rattlesden .. 1,049
Bullen, Stradbroke .. 1,039
Cubitt & Gots, Westfield .. 1,020
Chandler & Etheridge, Fressingfield .. 984
Butcher & Ramsey,* Stradbroke, Eye .. 970
* Accepted.

Whitley Bay (Northumberland).—For the whole of the works required in constructing underground conveniences at the Promenade, Whitley Bay, for the Whitley and Monkseaton U.D.C. Mr. J. P. Spencer, architect, 30, Howard Street, North Shields:—
J. & R. Johnson .. £1,603 7 3
J. Dobinson, North Shields .. 1,420 0 0
J. Douglass, Cullercoats .. 1,367 14 3
J. B. Harris, Newcastle-on-Tyne .. 1,343 16 0
W. Beautyman, North Shields .. 1,326 17 11
W. A. Styant .. 1,304 3 4
W. C. Tyrie, Gateshead-on-Tyne .. 1,234 4 6
Thornton & Co., South Shields .. 1,269 6 0
J. L. Miller, North Shields .. 1,209 0 0
Nesbit & Son .. 1,155 10 0
W. Dykes, Cullercoats .. 1,151 0 0
J. & W. Simpson, North Shields .. 1,125 0 0
N. Ritchie .. 1,091 0 0
T. Patterson* .. 1,060 0 0
* Accepted. [Rest of Whitley Bay.]

Law Cases.

A Scotch Architect's Claim for Fees.—In the Scotch Court of Session recently Mr. Alexander Porteous, architect, of Edinburgh, brought an action against Forsyth & Forrest for payment of £110 8s. 8d. for plans for certain buildings to be erected in Veitch's Square, Edinburgh, for an aerated water manufactory, the work including the adaptation of the premises from another kind of building to the factory. Lord Low gave decree for £60 15s., with expenses. He disallowed £10 for a preliminary survey on the ground that as the same survey had to be made in connection with a ground annual the remuneration for that was sufficient. He allowed a charge of £3 3s. for preparing plans for the Dean of Guild Court, and 2½ per cent. for the completed plans upon a sum of £1,000, instead of £1,660, being of opinion that the preliminary negotiations ought to have warned the architect that the lesser sum was not to be exceeded. He also allowed 3 per cent. on the smaller sum for preparing schedules and measuring plans. He reduced the charges for modifying the plans and measure alterations from £8 15s. in each case to £6 6s. The defendants reclaimed, and endeavoured to reduce the sum of £45, which was the amount of a tender that had been lodged at the commencement of the case; but the Court, without calling upon counsel for the plaintiff, adhered to the Lord-Ordinary's judgment, with expenses for the plaintiff.

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THE BUILDERS' JOURNAL

AND ARCHITECTURAL RECORD.

March 16, 1905. Vol. 19, No. 475.

6, Great New Street, Fetter Lane, E.C.

Summary.

The plans of Mr. Edwin T. Hall, F.R.I.B.A., and John Brooke, of London and Manchester, have been chosen for the rebuilding of the Royal Infirmary at Manchester. The cost will approach £350,000. (Page 125.)

Mr. G. W. Chilvers, before the Institute of Sanitary Engineers, referred to the inadequacy of a 2-gal. flush for closets, and emphasized the necessity of providing anti-syphonage pipes in connection with pedestal wash-down closets. (Page 131.)

Mr. G. Gilbert Scott read a paper on his design for Liverpool Cathedral before the Liverpool Architectural Society last week, in the course of which he said he had dreams of quite another style than Gothic, or rather the development of a style; but his ideas had not had time to mature. Gothic could not go much further: it was nearly at the end of its tether, and before long would die out as completely as it did in the sixteenth century. The actual floor-area of the central space of his cathedral, as now planned, was not less than the area of the octagon at Ely, so that it was not so small as commonly imagined. The original intention of having a great western court, flanked by cloisters, had been abandoned owing to the limitations of the site. All the mouldings, &c., were being designed by Mr. Bodley. (Page 124.)

Considerable progress has been made with the new university buildings at Birmingham (Messrs. Aston Webb & Ingress Bell, architects), and one section of the engineering department is approaching completion. Extensive machinery has been installed. (Page 128.)

Mr. J. D. Crace, in a paper on plasterwork which he read before the Institute on Monday evening, said there was no doubt about the external panels of Nonsuch being in stucco. Examples done seventy or eighty years later remained to this day, in spite of exposure and neglect. (Page 129.)

The lattice-girder bridges across the Thames at Sonning near Reading (in regard to which there was such an outcry when the proposal was made about a year ago) have just been finished by the Oxford County Council. (Page 127.)

It is wise to submit all plans to local authorities in ink on tracing cloth, whilst submission in duplicate is advantageous inasmuch as then one copy is returned bearing the approval stamp of the council. All that is absolutely required is a tracing giving complete plans and sections of every floor, and no authority can ask for elevations. (Page 129.)

Last Thursday the Glasgow Institute of Architects gave a complimentary dinner to Mr. J. H. Honeyman, who is about to celebrate his jubilee as a practising architect. (Page 134.)

Across the Green Park. WHEN Lord Windsor was elected an honorary associate of the Institute a few months ago we remember with what satisfaction his statement was received that it was not in the Government's mind to make a road through the Green Park, as part of the Memorial scheme. (By-the-bye, while referring to the latter, is it not surprising to see the fine semi-circular colonnade abandoned and a low balustrade in its place, after the manner of Sir Rowand Anderson's design?) The Improvements Committee of the London County Council, however, have had the proposal under consideration. At the western end of Pall Mall some old property is being demolished—maybe in connection with the new building which we understand is to be built there from the joint design of Mr. Norman Shaw and Mr. Ernest Newton—and the suggestion has been put forward that the present is a most favourable opportunity to make a road across the Green to Hyde Park Corner. Last Wednesday the Westminster City Council discussed the proposal, and eventually decided not to express an opinion until they had been informed whether the new and straightened Mall (from Buckingham Palace to Charing Cross) was intended to be for public traffic or not. Judging by what goes along the road at present we presume it is to be for public traffic, and that being so we see very little practical use in the proposal to cut a road across the Green Park, which will be quite spoiled thereby. If the suggestion is mainly on behalf of the 'buses avoiding the circuitous route around Piccadilly, then we consider it courts failure, for omnibuses will inevitably go where the shops are: and Pall Mall is not a place to gather fares: besides, Piccadilly Circus is the great centre in the west of London and the very spot for 'buses.

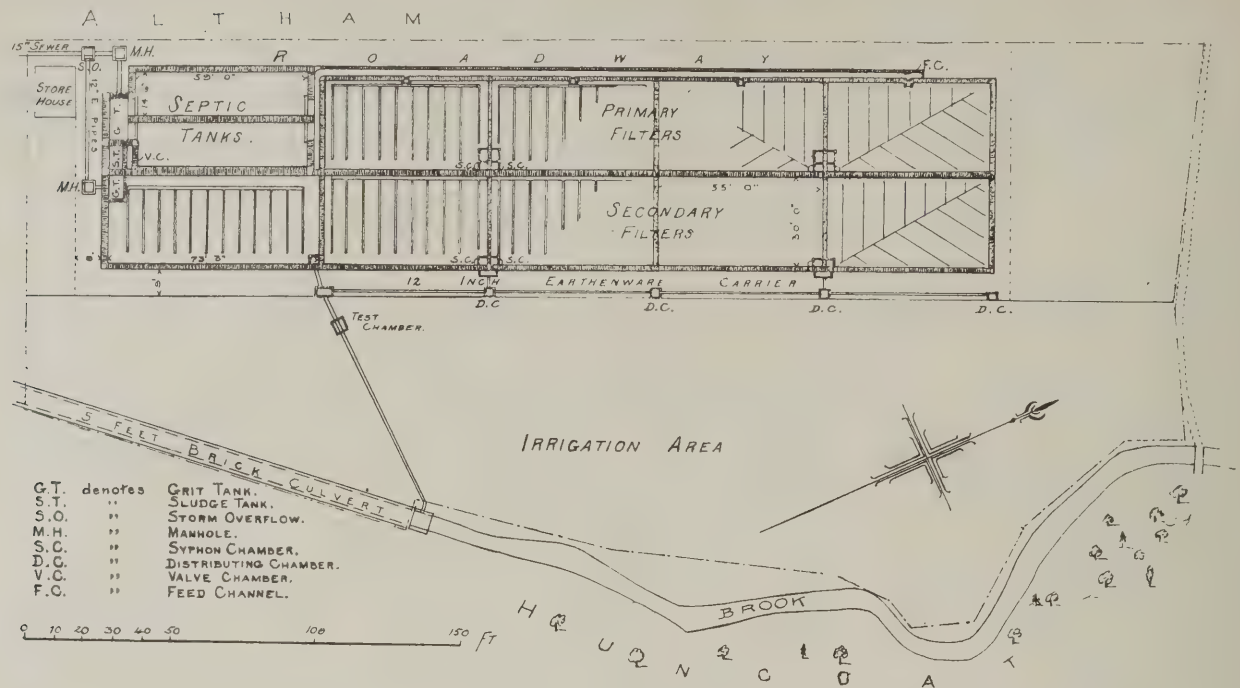
Classical Gothic. THE new parish church which is about to be erected at Forres would seem to be the first of a new style—the Newspaper Style. The local paper in speaking of it says: "The surrounding graves and monuments, the ornamental trees and the remarkably fine gate, pillars and steps will lend an added dignity to and set off the beautiful structure. The new church will have none of the aggressiveness of so many new churches. It is of the kind that might be expected from its architect, Mr. John Robertson, this being one of the happiest of his many happy conceptions. The building is in the classical Gothic style that never wearies one, every door, window, pillar and arch contributing

to produce the effect of a solemn old cathedral." And yet Mr. Gilbert Scott devoutly hopes that people will not look on his cathedral at Liverpool and be constrained to mutter, "The same old Gothic"!

Riposo Settimanale. AFTER discussing the matter for more than a week the Italian Chamber of Deputies has just passed a Bill intended to secure a legal day's rest for every class of workman. It seems strange to us to think of a week without its Sunday, but the Italian workman would regard our own day of rest as equally strange. The reports of the debate in the Chamber show that the idea is regarded with disfavour by many, but the working classes, we are assured, would welcome the holiday if it did not affect their wages!

Steel Framework. A WEEK or so ago we took occasion to point out that the newspaper statements about the utter destruction of steel skeleton buildings in the Baltimore fire were grossly exaggerated. We are now assured that the cased frameworks are the only remaining structures on the area, and the "Iron Age" of New York states that experts who have made exhaustive investigations on the ruins are unanimous in the assertion that the great catastrophe has proved a vindication of the steel skeleton type of tall buildings. This is more what one expected, remembering how very thoroughly American architects and engineers have considered the problem of fire-resisting construction. That the insides of the buildings should have been destroyed is not surprising, but the fire has certainly refuted the idea that steel skeletons, even when cased, must necessarily collapse under a fierce heat. It would be interesting to know from an actual test how an unprotected girder over a shop front withstood a fire as compared with a wooden beam.

Widford Church. MR. THACKERAY TURNER, secretary to the Society for the Protection of Ancient Buildings, calls attention to St. Oswald's Church, Widford, Oxfordshire, which is a disused parish church of considerable architectural value in the interesting neighbourhood of Burford, in the valley of the Thames. This beautiful building is in fair structural condition, but is in urgent need of repairs, and unless these repairs are carried out it must become a ruin. The Society has surveyed the building and has ascertained that the cost of executing the repairs will be £150, towards which sum £66 has been promised.



SEWAGE-DISPOSAL WORKS FOR HUNCOAT AND ALTHAM, NEAR BURNLEY. S. EDMONDSON, ENGINEER.

HUNCOAT SEWAGE-DISPOSAL WORKS.

IN his annual report to the Burnley Rural District Council Mr. S. Edmondson, the surveyor, says that the chief work undertaken during the past year has been the sewerage of Huncoat, and the construction of sewage-disposal works in connection therewith, which are now completed.

The system is that known as the "open septic tank and double contact." The population to be dealt with is 1,020, the dry-weather flow being 20,400 gals. The sewage is received into a detritus tank 12ft. 9in. by 7ft. 6in. by 4ft. 6in., 2,500 gals. capacity, and then flows over stone sills 4ft. wide and under scum-boards 2ft. 6in. deep in water into the open tanks. The dimensions of each tank are 59ft. by 14ft. 6in. by 5ft. 6in., capacity 29,319 gals.; total capacity 58,638 gals., or more than $2\frac{1}{2}$ days' dry-weather flow. A roughing filter, 73ft. 3in. by 14ft. 6in. by 3ft. deep, is provided for storm-water and has been designed to deal with the diluted sewage at the rate of 27 gals. per cub. yd. per day; it is composed of 1in. to 4in. broken hard-burnt bricks. The diluted sewage is distributed by means of wooden troughs or channels fixed about 5ft. apart. The effluent from the septic tank discharges over stone sills, provided with scum-boards as described for the inlet, into a carrier running alongside the filters, and by means of inlet chambers and distributing channels feeds the primary filters, the latter being actuated by timed syphons discharging on to distributing channels arranged for feeding the secondary filters, these in turn discharging on to land for further filtration if necessary. The bacteria beds, eight in number, have a gross capacity of 247,000 gals., and will be worked in series, namely, four primary and four secondary beds. The whole of the walls of tanks and filters are of brickwork in cement. There are 1,901 cub. yds. of filtering material in each series, or approximately 1 cub. yd. for every $10\frac{3}{4}$ gals. of sewage per day dry-weather flow or 32 gals. wet-weather flow. The filtering material is crushed clinker and screened engine ashes. The land available for further filtration is three-quarters of an acre. The primary and secondary filters have a total of 2,176ft. of distributing troughs, divided as

follows:—Each bed contains one main trough 50ft. by 12in. by 6in., feeding nine troughs 25ft. by 8in. by 6in. The roughing filter contains one trough 64ft. by 12in. by 6in., feeding twelve troughs each 25ft. by 8in. by 6in. fixed at 5ft. centres.

LIVERPOOL CATHEDRAL.

Lecture by Mr. Gilbert Scott.

MR. G. GILBERT SCOTT read a paper on his design for Liverpool Cathedral before the Liverpool Architectural Society last week. He said he was not a rabid Goth, and nothing annoyed him more than to hear people remark that no other style approached the beauty of our English Gothic. No one admired and loved this beautiful style more than he did, and although he decided upon Gothic he confessed he had dreams of quite another style, or rather the development of a style. But his ideas had not had time to mature, and he preferred, until he was older, to remain on safe ground rather than court failure by being too venturesome. Gothic could not go much further. It was nearly at the end of its tether, and before very long would die out as completely as it did in the sixteenth century. Whether the Liverpool Cathedral would rekindle the flickering flame and prolong its life, or whether this was the last flare-up of the Gothic Revival, it was idle to speculate.

In designing a modern cathedral the first thought that occurred was how to treat the central space. He felt convinced that this must be so designed as to form the predominating feature of the cathedral, both inside and out, and its planning and design was the first difficulty to be surmounted. He was compelled, however, to abandon the idea of treating a large central space satisfactorily; but he still felt that, whatever form this ultimately took, it must be the crowning feature of the exterior.

The actual floor-area of the central space, as now planned, was not less than the area of the octagon at Ely, which fact helped them to realize that the space at the crossing was not so small as was commonly imagined. This feature had been the cause of a good deal of discussion, many being under the

impression that he had infringed the conditions of competition. There was absolutely no condition that the central space should be large and capable of seating 3,000 persons—there was a suggestion, certainly, but no condition. Some had remarked that the space would be very dark; but they had evidently not noticed the four windows which opened directly into the central space. The great windows at the end of the tower transepts would play an important part in the lighting of this space. The adoption of the cross transepts in the nave and choir was not decided on merely because the idea was novel, but originated from a feeling that the Byzantine and Renaissance form of vaulting—namely, with domes and barrel-vaults—was a far more impressive and dignified way of roofing a space than the intricate and fanciful, though no doubt beautiful, vaultings of Gothic work. There was a peculiar solemnity and majesty about the dome and barrel form which was entirely lacking in the Gothic, and he preferred the simpler and broader treatment.

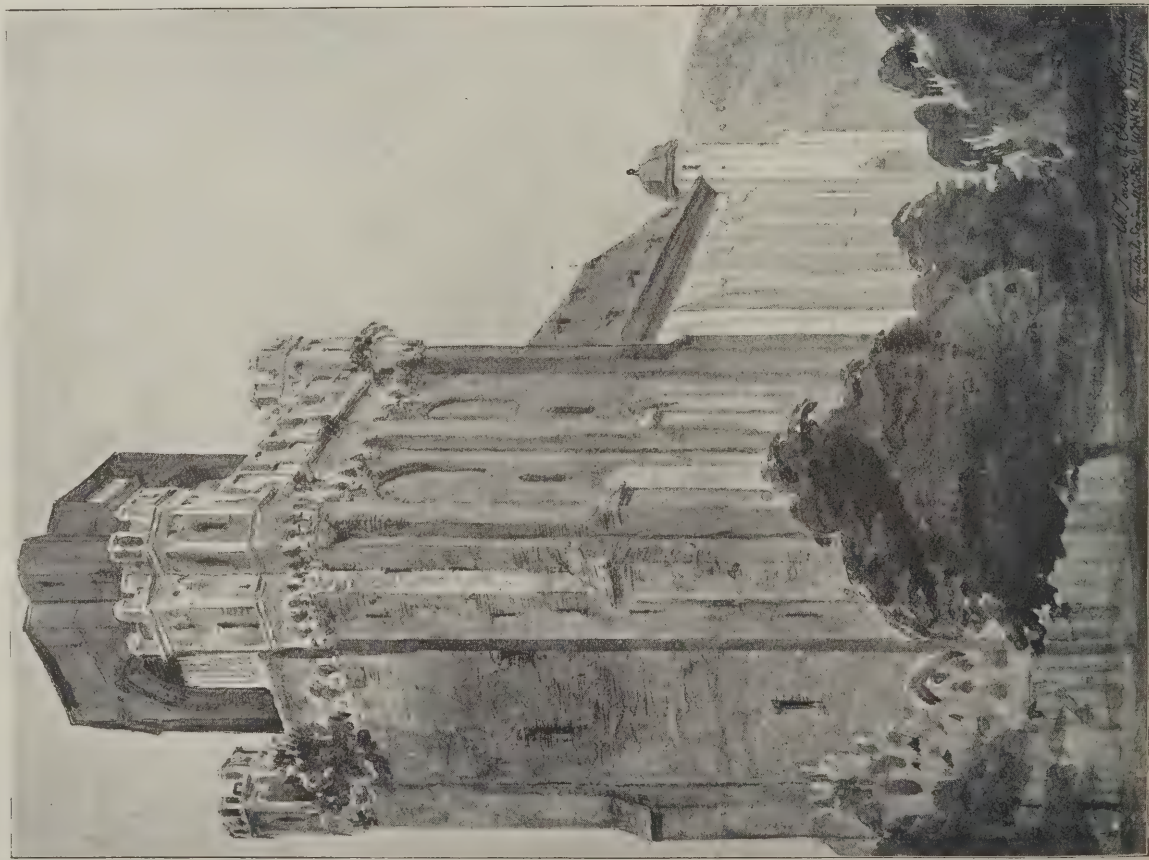
All the mouldings, &c., were being designed by Mr. Bodley, who stood unrivalled as a designer of beautiful and refined Gothic detail. The red sandstone to be used in Liverpool Cathedral lent itself to large and simple mouldings, and it was fortunate that this stone was especially adapted to a type of moulding which would be thoroughly in character with the rest of the building.

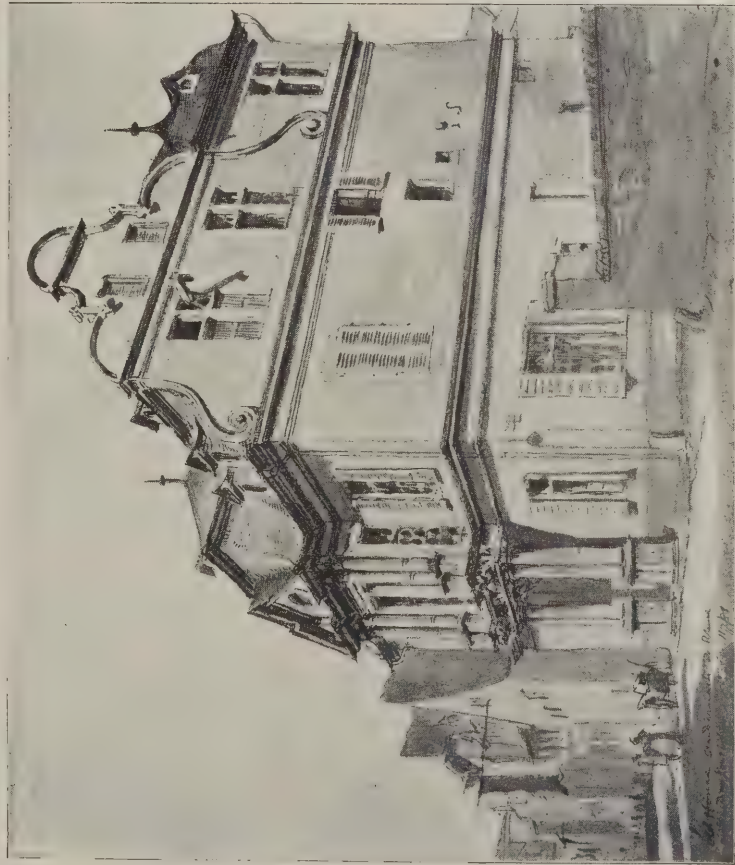
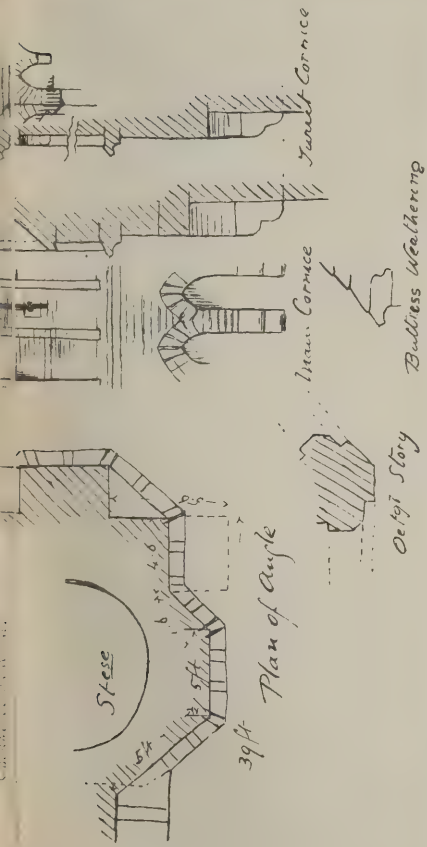
The original intention of having a great western court flanked by cloisters had been abandoned owing to the limitations of the site. Unfortunately, there was no direct approach to the west end. If they could have arranged a road leading from the west front it would have been easy to get such a fine feature as suggested, with steps running the full width of the court from cloister to cloister. Although the site had several faults, it was, on the whole, a very fine one; it possessed a feeling of romance which he hoped would be increased when the vast pile was completed.

In designing the cathedral he had endeavoured to impart a certain amount of interest to the building, taking care not to ignore beauty in order to insert a piece of originality. He could only hope that, when completed, people would be unable to say of the cathedral—"It's the same old Gothic;

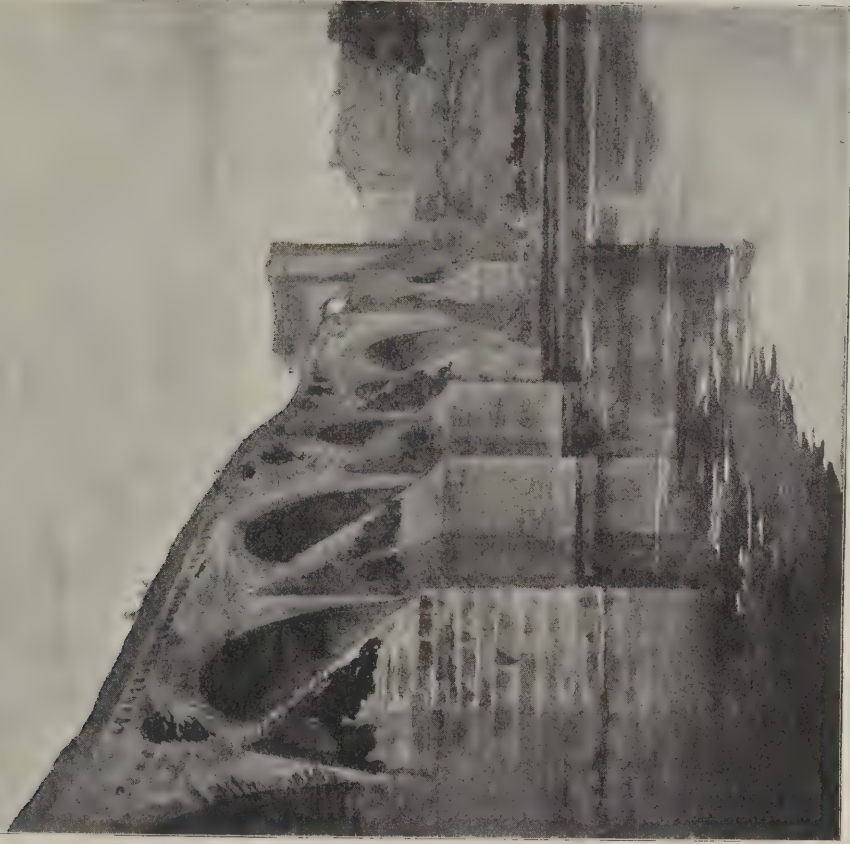
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Supplement to
THE BUILDERS' JOURNAL AND ARCHITECTURAL RECORD,
Wednesday, March 16th, 1904.





OLD HOUSE, ANDERNACH-ON-RHINE



THE MOSEL BRIDGE, COBLENZ.

DRAWINGS OF ARCHITECTURE: WALTER MILLARD.

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3



THE NEW BRIDGE AT SONNING, LOOKING TOWARDS THE VILLAGE.

THE ERECTION OF IRON BRIDGES.

A PAPER on this subject was read by Mr. R. S. Scholefield, A.M.I.C.E., before the last meeting of the Institution of Civil Engineers.

Mr. Scholefield said the question of the temporary work for the erection of iron bridges was of as much importance as any other part of the design. In large bridges the erection alone would probably cost as much as the ironwork, and the proposed method of erection should always be considered as part of the design of the bridge itself. In tropical countries, or in any place where rivers were liable to sudden floods, quickness of erection was often of paramount importance, as also in the renewal of existing railway bridges.

Almost every type of bridge could, if needful, be erected by means of temporary girders, protrusion or some other means of building out without fixed staging from the ground below; but in each case it should be considered whether such staging would not be really more economical in the end.

Bridges and the methods of their erection might be classified as follows—

- (A) Girders, on staging.
- (B) " by floating out.
- (C) " by pushing over sideways.
- (D) " by lifting bodily.
- (E) " by protrusion of temporary stage.
- (F) Continuous girders, by rolling out.
- (G) " by various means of erection.
- (H) Cantilever, by building out.
- (I) Metal arches, by building out.
- (J) Special methods.

(A) was the earliest system of bridge erection. Its great advantage was in the facility with which the work of construction could be afterwards done. Its disadvantages were the great cost and sometimes the danger arising from floods or ice. The following bridges were referred to as examples:—Allgyo, Kuilenburg, Bommel, Empress bridge over the Suttlej, and some others.

(B) had many advantages, but some risk must be taken during the execution of the work. A large quantity of plant, such as tugs, winches, barges or pontoons, was required. Many bridges had been partly protruded and partly floated out, and advantage might be taken of the tides for the raising and lowering of the pontoons. When the plant could be used again for other purposes this system might perhaps be the cheapest method of erecting large girders. The following examples were mentioned:—Moerdyk bridge in Holland, Syzrain bridge, Hawkesbury bridge (New South Wales); also the Hugli bridge, the Niagara, Niemen and Tay bridges.

(C) was much used for the renewal of

existing bridges where traffic had to be maintained. A staging was generally prepared on both sides of the bridge to be reconstructed—on the one side to receive and prepare the new structure before it is pushed over into its position, and on the other side for receiving the old structure after its removal from the bridge and for taking it to pieces. The examples referred to were:—The Hernad and Lomna bridges, the Prater bridge near Vienna, the Tornocz bridge, and the Delaware bridge at Trenton.

Apparently the simplest, but in some cases really the most complicated, system of construction was (D). Great care had to be taken in the handling and lifting of large girders in one piece, as there was great danger of straining and so injuring the metal. The advantages were that the riveting would probably be much better done at the contractor's yard than in the field, as in the case of building out, &c. Reference was made to:—Railway bridge near Mainz, the Crumlin, Meldon and St. Pinnock viaducts, the Saltash bridge and the temporary foot-bridge alongside London Bridge.

(E) was not often employed, and was used only where there was unusual danger from floods, &c. Generally, where the method of protrusion was adopted the girder was designed as continuous, and protruded without any other scaffolding. To avoid ambiguity in stresses the girders so protruded might be cut after erection at the points of contra-flexure and so formed into a cantilever structure. This class could, perhaps, with advantage be included in class (J). The case of the Regoa bridge was referred to.

(F) was probably the most advantageous method for the erection of the continuous girder, the chief advantages being that the use of staging was entirely obviated and that the construction of the girders might be carried on without danger and in a sheltered position. The girders had to be made stronger in order that they might be protruded, that is, they had to be strong enough to carry their own weight at all positions whilst the protrusion was being accomplished. One source of danger was in the stress that must occur at the top of the piers during the progress, unless very special arrangements were made. The following cases were referred to:—The Fribourg bridge (Switzerland), the Stadlau bridge (Vienna), the Dao viaduct (Portugal) and the Tardes viaduct.

(G) Sometimes continuous girders were erected on staging, in other cases they were floated out, and the principle of continuity was perhaps effectively given by induced initial stresses; or a continuous girder might be built out from the abutments, the members being arranged to meet in the middle of the opening. In other cases the girders might be lifted bodily, and perhaps even lifted as the piers and supports were being built. In one case continuous girders had been moved sideways, and great care had to be taken that the ironwork was not strained injuriously in the operation. The following bridges were mentioned:—The Znaim viaduct (Moravia), Bordeaux bridge, the Britannia tubular bridge, the Irwell viaduct on the Manchester Ship Canal, and the Approach viaduct, Forth bridge.



VIEW LOOKING TOWARDS CAVERSHAM.

(H) had been adopted for the construction of some of the largest bridges in the world. The chief advantages were that scaffolding or staging was dispensed with. The greatest care had to be taken with the setting-out of the work, so that when the work from both sides met in the centre of the opening there should be no error at the junction. The temporary ties necessary to hold up the work during the progress were relatively of very small cost. The cases referred to were the Kentucky and Forth bridges.

(I) was similar to the building-out of a cantilever. Special means were discussed for effecting the accurate junction in the centre of the span. The following instances were given:—El Cinca bridge (Spain), the St. Louis bridge over the Mississippi, the Douro bridge (Spain), and the Rio Grande bridge.

Under the last heading (J) reference was made to some processes which could not be placed under either of the preceding classes. They included the construction of metal arches by the protrusion of a temporary stage and of suspension bridges from suspended platforms.

THE SONNING BRIDGES.

IT will be remembered that some time ago a considerable outcry was raised against the proposed demolition of the old wooden bridges across the Thames at



DETAIL OF OLD BRIDGE.

Sonning (near Reading) and the erection of lattice-girder bridges in place of them. The latter have just been completed, and by the illustrations here given readers can form their opinion of the alteration. The dimensions of the new work are indicated on the plan and elevation printed on p. 125. Those who have visited Sonning will recollect the old brick bridge that leads up to the village. This is in continuation of those shown in the illustrations. It still remains intact, but as we understand the new bridges were erected chiefly with the object of taking heavy traffic—traction engines, road rollers, &c.—which the old wooden construction was unable to bear, and as the existing brick bridge already has a notice board at one end of it cautioning drivers that it is not to be used for heavy vehicles, we presume its ultimate demolition is intended; for it would seem useless to erect the new bridges strong enough to receive traction engines when the old brick structure is unable to support such loads.

The new steel bridges have been carried out by the Oxford County Council from the design of their surveyor, Mr. H. J. Tollit.

The contractor for excavating, mason and brickwork was Mr. Macarty E. Fitt, of Reading; the steelwork by Messrs. E. C.



THE OLD TIMBER BRIDGE AT SONNING.

& I. Keary, Ltd., engineers, of Birmingham; the granite channelling and footpaths by Messrs. T. Free & Son, of Maidenhead; and the paving of the roadway by the London Sanitary Paving Co., Ltd. Mr. George Scaife was the clerk of works.

Bricks and Mortar.

Aphorism for the Week.

No one can speak long in impassioned or rhetorical style about any society whatever without introducing metaphors drawn from architecture.—SIR JOHN SEELEY.

Our Plates. MORDEN COLLEGE, Blackheath, is an interesting example of Wren's work. Mr. Bossom's careful measured drawing of the interior panelling and doorway was made in 1901. The chief particulars are given on the plate and need not be repeated here.—Of Mr. Walter Millard's drawings there is not much for us to say. They are very skilful examples of brushwork and are essentially the record of an architect. In this particular we would draw attention to the tower details in order to show that, though an architect may make an excellent drawing of a building—admirable for its pictorial qualities—he can nevertheless supplement it with details of just those special features that merit closer attention from an architectural point of view; in other words, the architect can always assert himself while being no whit the less an artist.

Old Glasgow Buildings.

A PAPER on "Some Old Glasgow Buildings" was read last week before the architectural section of the Royal Philosophical Society of Glasgow by Mr. Alexander Gardner, hon. secretary. Beginning at the cathedral, special attention was given to the "western towers," which unfortunately were removed in the middle of the last century, much to the regret of all antiquarians and persons of taste. The chief historical events connected with the Bishop's Castle, the last vestiges of which were removed about 1790, next claimed attention. The erection of the old college buildings in the High Street was begun in 1632 and completed in the following century, with the exception of the Hunterian Museum. The Tolbooth at the Cross, the site of which had been occupied by an earlier jail or tolbooth, known as the Pretorium, was erected in 1626 and removed in 1817, with the exception of the fine old tower now known as the Cross Steeple. The Tron

Church Steeple, abutting as it still does on the south side of the Trongate, was built in 1637, and for some time contained the "tron" or public weighing machine, from which it took its name. Hutcheson's Hospital was built in 1641 and taken down in 1795 to allow Hutcheson Street to be formed. The stately Shawfield mansion, built in 1711 by David Campbell of Shawfield, was famous in the annals of the city as the scene of the malt tax riots in 1725, and as the headquarters of Prince Charles Edward when he spent ten days in Glasgow after his retreat from England. The Merchants' Hall in the Bridgegate was erected in 1651–9 from designs by Sir William Bruce, of Kinross, afterwards architect to Charles II. The picturesque old steeple still remains as one of the landmarks of old Glasgow, and it was interesting to know that it was due to the successful pleading of the present Lord Provost that the Town Council stayed their hand when its destruction was meditated. St. Andrew's Parish Church, famous for the "flat arches" of its fine portico, was begun in 1740 and finished sixteen years later. The Saracen's Head Inn in the Gallowgate, built 1755, was for long the fashionable hotel of the town, and was visited by Dr. Johnson and Boswell on their return from the Hebrides, Robert Burns, Wordsworth and Coleridge, and many other notable personages.

Mr. Goscombe John's new Studio.

MR. W. GOSCOMBE JOHN, A.R.A., has just moved from Woronzow Studios to more spacious and convenient quarters at 24, Greville Road, St. John's Wood, where building operations have been in progress for some time. The house and studios taken by him were occupied years ago by the late Otto Weber, the animal painter, who used a part of what is now the sculptor's studio for the accommodation of his equine and bovine models, the large garden beyond serving as a kind of paddock. Subsequently Mr. E. Roscoe Mullins, the sculptor, took the house and worked in the studio that is now Mr. John's. However, the new proprietor of 24, Greville Road has rebuilt the studio, which is now twice its original size, and from the sculptor's point of view approaches the ideal—very high, brilliantly lighted, and with an entrance to the road that permits conveniently the ingress or egress of large or heavy work in bronze or marble. Mr. John's garden is bounded in part by that of a brother artist, Mr. Frank Dicksee, R.A., whose house is just round the corner, in Greville Place. In addition to his workrooms on the ground floor, Mr. John has a fine studio upstairs, a

studio that was the painting-room of Otto Weber. Probably the sculptor will not work in this room, in which at present are arranged the original models of a number of his smaller works. One of them has a special interest for him, the model of that pathetic group of an old man bending over a dying child, "Parting," which gained for Mr. John the gold medal and travelling studentship at the Royal Academy in 1889. On the night that the medal was awarded to Mr. John at Burlington House, Sir Lawrence Alma-Tadema commissioned the young student to execute the group in bronze, and the completed work now stands in the painter's studio in Grove End Road.

tion, and there was a special treatment given the column and capital, but beyond the developments, not origination, of the pendentive dome and the superseding of marble by glass mosaic there was little of real invention. It was noteworthy that the undesirable merits of the style in decoration, architectural design and constructive ingenuity were coincident with degeneracy in other arts: sculpture and figure drawing were of the poorest.

St. Botolph's,
Aldgate.

THE block on this page, showing some of the restoration work carried out at St. Botolph's, Aldgate, by the late

reach a height of about 25ft. Of these buildings the chief features will be the great hall and the block for the faculty of mining, but they will also contain testing and electrical laboratories, equipped in the most up-to-date fashion, workshops, students' reading-rooms and drawing offices. The rest of the buildings—the engineering block and the metallurgical block—are nearer completion than the main hall, though progress is most marked in respect of the former. In the great engineering hall powerful engines and dynamos, and a number of machines of all descriptions and various mechanical contrivances, have been placed in position, and in some instances they have been got into working order. A few of the students in the advanced classes have already made their acquaintance with the engineering shop.

HOSPITAL AT CONISBOROUGH.

THE new infectious diseases hospital at Conisborough, recently opened by the Doncaster and Mexborough Joint Hospital Board, stands on a site of $7\frac{1}{4}$ acres. The buildings consist of an administrative block, scarlet-fever block comprising male and female wards, a typhoid block with similar accommodation, and an isolation block for doubtful and other infectious cases. The laundry and boiler-house block contains a washhouse fitted with the usual appliances for washing by machinery, an ironing-room with fan-ventilating drying closet, a disinfecting chamber fitted with Thresh's disinfectant, and a mortuary, stable and ambulance sheds. The boiler-house contains two boilers, which supply steam for the laundry, disinfectant, hot-water apparatus for heating the wards, hot-water supplies to all the baths and lavatories throughout the buildings, and for working the electrical plant. The ward blocks are all furnished with glass verandahs in the front, having a south aspect for convalescents. The buildings are lighted by electricity generated by a De Laval turbine dynamo in the boiler-house.

The strings and dressings are of Doulton's buff terra-cotta. The ward stoves and sanitary fittings are also Doulton's. The buildings at present provide for the treatment of thirty-six patients, and the cost works out at £339 per bed. Messrs. Harold Arnold & Son, of Doncaster, were the contractors; and Messrs. Benham & Sons, Ltd., of London, sub-contractors for the engineering work. Mr. J. M. Morton, F.R.I.B.A., of South Shields, was the architect, and Mr. Fred Simpson, of Doncaster, the clerk of works.

Obituary.

Mr. Lawrence Bartholomew Moore, the father of the building trades of Newport, Mon., has just died at the age of eighty-two years. He was a native of Hartland, in North Devon.

Mr. John M'Naughton, building contractor, of Aberfeldy, died recently at the age of fifty-one years. He was a native of Perth, but had spent his boyhood and youth in Strathgath. He started business as a mason contractor more than twenty-six years ago, and had carried out many important building contracts in Perthshire.

Mr. Albert Jubb, of the firm of Albert Jubb & Son, Ltd., painters and decorators, of Sheffield, died last Monday week at the age of fifty years. He was born at Retford, Notts, and founded the business of the firm in Sheffield about twenty years ago: his son was associated with it later, and in 1899 it was converted into a private limited liability company.



THE ORGAN GALLERY AT ST. BOTOLPH'S, ALDGATE, AS RESTORED BY J. F. BENTLEY.

Byzantine Architecture.

THE Glasgow Architectural Association held a meeting on February 27th (Mr. W. J. Blain, president, in the chair) when Mr. Alexander McGibbon read a paper on "Byzantine Architecture." The current interest in the style among architects—largely due to its adoption for the Westminster Cathedral—was the essayist's justification of the analysis and appraisal offered. Though beyond any likely gain in the way of addition to stock-in-trade of features, the inherent worth of many of its motives and methods, æsthetic and constructional, should command attention. Extravagant claims had been advanced for its present-day applicability, and unwisely, for its limitations were evident. As Mediæval Greek it had what we should expect, an excellence of ornament distinct from that of Western Roman, both in design and execu-

tion. Mr. Bentley, has been kindly lent to us by the vicar, the Rev. J. F. Marr. Particulars of the work were given in the article on the City churches published in our issue for March 2nd.

Birmingham University Buildings.

CONSIDERABLE progress has been made with the new university buildings at Bournbrook, Birmingham (Messrs. Aston Webb & Ingress Bell, architects), and one section of the engineering department is approaching completion. Although little more than the foundations have yet been laid of some of the buildings which are to constitute this part of the university, some idea may now be obtained of their dimensions and character. The main buildings are being erected on an elevated site facing the Bristol Road, about a quarter of a mile from Bournbrook, and the outside walls, in solid masonry, now

R.I.B.A.

Mr. Crace on Plasterwork.

A MEETING of the Royal Institute of British Architects was held on Monday evening at 9, Conduit Street, W., the chair being occupied by Mr. Alfred Darbyshire.

Mr. Alex. Graham announced with regret the deaths of Dr. Murray, of the British Museum, and Mr. Twist, A.R.I.B.A., of South Africa.

Mr. J. D. Crace then read a paper on "Plaster Decoration." After referring to its earliest use in barbaric days and afterwards in Egypt and Greece—incidentally mentioning the stucco decorations at Knossos which were destroyed before 1500 B.C.—Mr. Crace spoke of the beautiful specimens of decorative stucco-work which had been unearthed in excavating the ancient sites of Rome and the surrounding country.

He then turned to a very different growth of plaster decoration developed under the Mohammedan conquerors, describing the decorations of the great Mosque of Ibn Tootoon at Cairo (ninth century). In the Arabic art of Egypt plaster continued to be used as an important factor in decoration during the next five centuries. The ornamentation of the domes and the use of a fine stucco in low-relief ornament, as a preparation for gilding and colour on the wooden beams of its flat roofs, were specially noteworthy. The palace of the Alhambra was the very apotheosis of plaster—of plaster casting carried perhaps to an excess of richness and elaboration, but never losing its true quality of ornament designed purposely for casting.

In European art during mediæval times we got little glimpse of the decorative use of stucco until the fifteenth century. An original and striking example was to be seen in the drum of the dome of San Eustorgio at Milan, the work of Michelozzo Michelozzi, of Florence, said to have been executed in 1462. In the second half of the fifteenth century Bernardino Pinturicchio was making considerable use of low-relief enrichments, and a few years later Bramante was at work on St. Peter's. His investigations, says Vasari, resulted in the discovery of the method of preparing stucco employed by the ancients, the secret of which had been lost.

Alessandro Vittoria was one of the best-known stucco-workers in the latter half of the sixteenth century. His works under Sansovino at Venice, in the Libreria, and in the Scala d'Oro of the Ducal Palace were characteristic examples of his style.

Francis I. attracted to France some of the most capable of the Italian artists skilled in stucco. Primaticcio and Il Rosso came about 1530, and their wonderful stucco decorations at Fontainebleau long influenced French design and French sculpture. Niccolò dell'Abbate followed twenty years later, and then his three sons, the youngest becoming after a time the director or manager of these decorative works. Their work was a fine field for the study of what may be done in stucco, and it was the parent of the rich decorations of Louis XIV.'s reign, which, in their turn, became the model for civilized Europe.

Henry VIII. was also very successful in securing the services of able artists in England, many of them pupils or relations of those who were at work on the masterpieces of the Vatican.

It was to the Palace of Nonsuch that the new stream of talent was directed; although not a vestige of it now remained, the names of some of the men who adorned it were a guarantee that the work was neither coarse nor commonplace. As to the question lately raised about the external panels of Nonsuch being in stucco, Mr. Crace said there was not the smallest doubt on the subject. There

were plenty of examples done more roughly within the next seventy or eighty years which remained to this day, in spite of exposure and neglect.

External decorative work in plaster continued to be a feature of many English houses down to the end of the seventeenth century. But the interior was the more important field, and from the time of Nonsuch for a century no house of any pretence was without its elaborate plaster ceiling and frieze. Admirable in many ways as these old ceilings were, few of those who did them had the art or the skill of the Italians who made ornamental plasterwork popular. The latter endeavoured to make their work perfect in modelling and finish. Each figure was a work of art. In the English plasterwork, however, scarcely a figure could be found that was not more or less barbaric in execution, and the minor work, effective as it was, was often greatly wanting in grace of line and in intelligent modelling.

The next step in English plasterwork led straight to the classic work of Jones and Wren. The gap caused by the Civil War made the change more complete. Building operations after the great fire opened the way to new men and methods. French and Italian plaster-workers were again invited to England in Charles II.'s reign. Besides the work in St. Paul's, St. Stephen's, Walbrook and other City churches, the chapel of Trinity College, Oxford, might be cited as a good typical specimen of plaster ornamentation. A feature of some of the plaster decoration of the end of the seventeenth century was the elaborate modelling of fruit, flowers and foliage in full relief, often in parts quite detached from the grounds and either supported by wires embedded in the plaster or by small sticks of tough wood. This work, full as it was of artistic ingenuity and clever modelling, was by that very ingenuity departing from any true principles of stucco-work, and therefore hastening the decay of the art. A notable example was the chapel ceiling at the Royal Hospital, Kilmainham.

The next modification of style was largely due to Kent. In his designs the plaster ornamentation was mainly used as architectural enrichment, bold in treatment—sometimes too bold for the space, but effective in its way. Following closely on Kent's work came a flood of plaster ornament derived from the French work of the time (Louis XV.). This was sometimes very good—often straggling and purposeless, yet not without a certain elegance. With this style stucco modelling practically came to an end. All that followed was cast and fixed.

The change of style brought about by the brothers Adam was due to the same influence which had produced the detail of the Vatican Loggia and the Villa Madama—namely, that of the antique stucchi in the excavated ruins in Rome. The difference in the result might be thus accounted for. Giovanni da Udine studied them, as an artist, by endeavouring to produce similar work with his own hands. Robert Adam, as a draughtsman, copied them on paper, as did probably the Frenchmen through whom France adopted the style. It was undoubtedly elegant and the effect refined; and, since the method of reproduction was mechanical, it lent itself to extensive use.

Much good plasterwork had been done in the last half of the nineteenth century—always in the form of attempts, sometimes very successful, to reproduce a past style, and by casting. "Fibrous plaster," introduced since 1861, was a valuable innovation, and presented immense advantages. It did away with the danger of enormous overhead weight, and required so much the less timber structure to carry it; it could be executed quickly, and it dried quickly.

A vote of thanks was proposed by Mr. R. Phené Spiers, seconded by Mr. G. H. Fellowes Pryne, and supported by Mr. Aumonier.

PLANS OF NEW BUILDINGS.

By B. WYAND.

IN the present chaotic and fragmentary state of the London Building and allied Acts—which are acknowledged to be beyond the ken of both lawyers and laymen—it would be almost an impertinence to offer advice upon any matters dealt with by them. Happily, too, any such advice would be largely superfluous, for it is only in respect to drainage matters that a deposit of plans is called for in the metropolitan area, and I can therefore limit myself with a clear conscience to a consideration of the matter as it affects urban districts. Urban districts, it must be remembered, comprise nearly two-thirds of the population of the country (England and Wales),* whilst in addition to this a great many rural districts have obtained urban powers under which they have adopted by-laws as to new streets and buildings. The following are the figures for 1901:—

			Population.
Administrative County of			
London	-	-	4,536,063
Urban districts (1,121)	-	-	20,518,205
Rural districts (666)	-	-	7,471,242
Areas neither in urban nor rural districts	-	-	565

England and Wales - 32,526,075

Deposit of Plans.

The first point which arises in connection with the submission of plans of new buildings is, What plans are required by the local authority? And as this is the most important item to be considered, I give in full the clause (from the L.G.B. Model) dealing with this portion of the by-laws:—

"Every person who shall intend to erect a building shall give to the council notice in writing of such intention, which shall be delivered or sent to their clerk, at his or their office, or to their surveyor, at his or their office, and shall at the same time deliver or send, or cause to be delivered or sent, to their clerk, at his or their office, or to their surveyor, at his or their office, complete plans and sections of every floor of such intended building, which shall be drawn to a scale of not less than 1 in. to every 8 ft., and shall show the position, form and dimensions of the several parts of such building, and of every water-closet, earth-closet, privy, ashpit, cesspool, well and all other appurtenances, and in which the building shall be so described as to show whether it is intended to be used as a dwelling-house or otherwise.

"Such person shall at the same time deliver or send, or cause to be delivered or sent, to the clerk to the council, at his or their office, or to their surveyor, at his or their office, a description in writing of the materials of which it is intended that such building shall be constructed, and of the intended mode of drainage and means of water supply. Such person shall at the same time deliver or send . . . a block plan of such building, which shall be drawn to a scale of not less than 1 in. to every 44 ft. and shall show the position of the buildings and appurtenances of the properties immediately adjoining, the width and level of the street in front, and of the street (if any) at the rear of such building, the level of the lowest floor of such building and of any yard or ground belonging thereto.

"Such person shall likewise show on such plan the intended lines of drainage of such building, and the intended size, depth and inclination of each drain; and the details of the arrangement proposed to be adopted for the ventilation of the drains."

* The Public Health Act, 1875, under which powers to make by-laws respecting new buildings, &c., are given (sec. 157), does not extend to Scotland or Ireland, nor (except where expressly provided) to the metropolis.

Nearly every urban authority has adopted this clause as it stands in the L.G.B. Model, and it is only in exceptional cases that the by-law has been altered so as to require plans to be in duplicate and in ink on tracing cloth. It is wise however to submit all plans in ink on tracing cloth, whilst submission in duplicate is advantageous inasmuch as then one copy is returned bearing the approval stamp of the council. As to the right of the council to retain a copy at all, the point has not so far as I know been decided, and a note to the clause in the Model says:—

Where sanitary authorities desire to avoid possible litigation as to ownership of plans by retaining copies of the plans—and there are obvious advantages in their possessing copies of the plans—they should effect their purpose through the agency of their surveyor. It is believed that the regulations adopted by many sanitary authorities with regard to the conduct and duties of their officers provide for the preparation of tracings by the surveyors.

All that is absolutely required then is a tracing giving complete plans and sections of every floor, and no authority can ask for the submission of elevations.

Certain councils have obtained powers whereby they can require plans to be upon their special form, and this is one of the points which should be ascertained at the earliest moment. It is a terrible imposition upon architects and builders, necessitating the redrawing of the whole plans, whilst in the case of plans prepared to quarter scale they must be reduced to one-eighth. The Willesden U.D.C. may be cited as one of the offenders in this way, whilst there are others which, although accepting tracings, require the application to be made upon special forms.

Preliminary Points.

Before preparing plans for submission the architect (which term will include builder in this article where the builder is his own draughtsman) should make the following enquiries from the council's surveyor:—

- (1) Mode of drainage, whether dual or otherwise. (In dual systems storm-water and sewage are separate.)
- (2) Depth, size, position and direction of flow of sewer to be entered.
- (3) If on dual system, depth, size, &c., of storm sewer as above.
- (4) Mode of connection and whether made by council or owner.
- (5) Building line, and if a corner plot whether any building line is to be observed on the flank frontage.
- (6) What special forms (if any) it is necessary to fill up.
- (7) Whether plans in duplicate are required.
- (8) Diameter and inclination of house drains. (This is advisable, as the opinions of surveyors are widely divergent upon these matters.)

And this list should be supplemented by a request for a copy of the council's by-laws and of any necessary forms.

Structural Notes.

The architect who has had much experience with urban councils will have found that it is usually for some trivial detail that his plans are rejected. I have known members of a plans committee try and throw back a plan (to one-eighth scale) because it did not show the air-bricks for ventilation of space beneath floor, and rejections owing to the damp-course not having been drawn on the sections were frequent. It is straining a point to ask for details like these (which are fully covered by the by-laws), but it is as well to hold the candle to the devil and avoid by all possible means a risk of the plans being returned marked "not approved," especially as a council is under no obligation to express its reason for rejection. The following hints should be carefully studied before the preparation of plans:—

Site Concrete.—Show this clearly on all sections with full thickness.

Concrete Foundations.—Depth must of course depend upon nature of soil, but width

is relatively constant and equals double thickness of wall *plus* 12 in. In London these need only be 8 in. wider than double thickness of wall, and I have often had to reject plans submitted to urban councils owing to their being in this respect drawn to Metropolitan requirements.

Thickness of Walls.—This is of course determined by the height and length of walls, cross-walls being deemed return walls subject (a) to their being at least two-thirds the thickness of that required for an external or party-wall, and (b) of full thickness if they support a superincumbent external wall—no cross wall however being of a less thickness than 9 in.

External Parapets.—More plans have in my experience been rejected under this head than under any other. The by-law prescribes that "every person who shall erect a new building shall cause such part of any external wall of such building as is within a distance of — ft. from any other building to be carried up so as to form a parapet 1 ft. at least above the highest part of any roof or gutter which adjoins such part of such external wall," and so on. The number of feet varies, the Model giving 15 and most councils adopting 10. This, it is to be remembered, is quite apart from and extra to the provision for party-walls, which are to be 15 in. above roof or flat.

Coping to Parapets.—It is as well to show this on the section.

Bressummers, Beams and Joists in Party-Walls.—These must be kept a clear 4½ in. from centre of party-wall; this, in the case of 9 in. party-walls, necessitating thickening of the wall so as to form a pier, or the provision of a storey post. Corbelling may be allowed, but it is not provided for in the by-laws as to beams, bressummers, &c.

Templates.—These should be shown and coloured a good strong blue in section so as to be clearly distinguishable from the brick-work.

Chimneys, Flues, Timber near Flues.—All the by-laws dealing with these should be read and care taken that the plans do not through any inattention to detail show timbers nearer to flues, chimney openings and chimney breasts than those prescribed.

Chimney Backs.—The thickness of these in party-walls is a fruitful theme of discord and annoyance, the by-laws not being very clear, and it is therefore the best policy to show a full 9 in. back throughout the flue until it emerges above the roof, where it can drop to 4½ in.

Chimneys above Roof.—Note that every chimney shaft or smoke flue shall be carried up a minimum height of 3 ft. above roof, flat or gutter adjoining, and may be carried to a maximum height not greater than six times the least width of the shaft at its junction with the roof, flat or gutter. When bonded with another chimney shaft not in the same line, or otherwise made secure, this height may however be increased.

Open Spaces in Front and Rear.—The requirements herein vary so in different districts that it is impossible to give any definite data to go upon. Thus in the by-laws as to front space the L.G.B. Model requires 24 ft. to the opposite building, and Walthamstow U.D.C. places it at 40 ft.; whilst in that as to rear space the variance is still greater, the L.G.B. Model laying down 150 sq. ft. as a minimum, Southall-Norwood U.D.C. 200 sq. ft., and Wealdstone U.D.C. 500 sq. ft. The architect must study the by-laws of the special district.

Floor Ventilation.—The Model provides for a space of not less than 3 in. between under surface of joist of lowest floor and upper surface of site concrete; but this space has in practice been found so inadequate that many councils have received the sanction of the Local Government Board to an amended by-law asking for 6 in. Under this latter

form the ground-floor line (where there is only a single damp-course and no cavity) must be shown not less than 14 in. above outside ground level, this seemingly excessive height being made up as follows:—

	In.
Damp-course above ground level	6
Sleeper plate	3
Joist	4
Flooring	1
	14

For it must be borne in mind that *all* timber must be above damp-course. The number of plans I have known rejected owing to carelessness in showing height of ground-floor level is legion.

Ventilation of Rooms.—Habitable rooms without fireplaces must have "special and adequate" means of ventilation, and in the submission of plans which may show such a room the words "special ventilation . . ." (state the means) should be clearly printed on the drawing. It will save trouble, too, and possibly rejection, if every room without a fireplace is treated, for the purpose of plan submission, as habitable, and means of ventilation provided for.

Drainage Notes.

Drainage Section.—A section through drain (to scale of block plan) should always be given. On this can be shown also the levels of the streets upon which the property abuts.

Inspection Chambers. Although the Local Government Board Model makes no provision for these, and, so far as I know, there are no by-laws framed by urban councils to deal with them, it is well to show on every plan (a) an intercepting chamber giving access to the sewer-gas interceptor, (b) a turning chamber at every bend in the main house drain, and (c) such access chambers as may be necessary to pick up all branch drains. Councils will not pass schemes of drainage devoid of chambers, and although it may be a pure matter of "bounce" on their part they invariably throw out plans not in conformity with their views.

Gulleys.—In urban by-laws will be found a clause to the effect that waste pipes are to discharge in the open air "over a channel leading to a trapped gully grating at least 18 in. distant"; but beyond seeing that waste pipes do discharge in the open the clause may be said to be inoperative. I have not known a district where they compel the 18 in. channel; in fact, many councils favour a gully with side or back inlets for reception of rainwater or waste pipes. One great advantage of these inlet gulleys is that the choking of the grate by leaves and debris does not affect the flow, whereas in the ordinary gully (with or without channel) a choked grating means a flooding of the yard with sewage matter.

Soil and Vent Pipes.—It should be noticed that under urban by-laws soil and ventilating pipes must have a diameter of at least 4 in. whereas under the London County Council by-laws 3½ in. is the minimum *internal* diameter. The urban by-law has no qualifying adjective, so the 4 in. might be taken as an overall measurement.

Water-closets.—The idea is prevalent that outside water-closets are sufficiently lighted and ventilated if the door be cut down a top and a clear space left at the bottom. At one time most urban councils would be satisfied with this; but now (with but few exceptions) they keep strictly to the letter of the by-law and require both a window (containing an area of not less than 2 sq. ft. and an air-brick or grating—precisely the same as for inside water-closets. The window must be shown on plans. The Model, it may be noted, does not call for any trap to a water-closet apparatus, although it is decided enough upon the form of trap that shall not be used.

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• MORDEN COLLEGE • BLACKHEATH • •

• NOTE ELEVATION
• ORGAN CASE IS
• OMITTED AS IT IS
• COMPARATIVELY
• AND IS A VERY
• SPECIMEN • •

• FRONT OF ORGAN
• LOFT IS 2-3 ABOVE
• THE LOWEST STEP
• OF LOFT.

LEVEL OF LOWEST
STEP OF LOFT.

WALL
LINE

THE WOODEN PIERS
SUPPORTING ORGAN
LOFT ARE SITUATED
5' 7 1/4" FROM PANELLING
ON THE END WALL OF
THE CHAPEL.

NOTE THE PEWS, WALL
PANELLING AND FRONT
OF LOFT ARE CONSTRUCTED
OF OAK.
FLOORING OF AISLE IS
OF SANDSTONE SET VERY
REGULARLY.
SEATS OF PEWS ARE OF
PINE.

11' 11 1/4"

5' 11 1/2"

MODERN
LOCK

• INTERNAL ELEVATION OF
• ENTRANCE SHEWING
• ORGAN LOFT ABOVE •

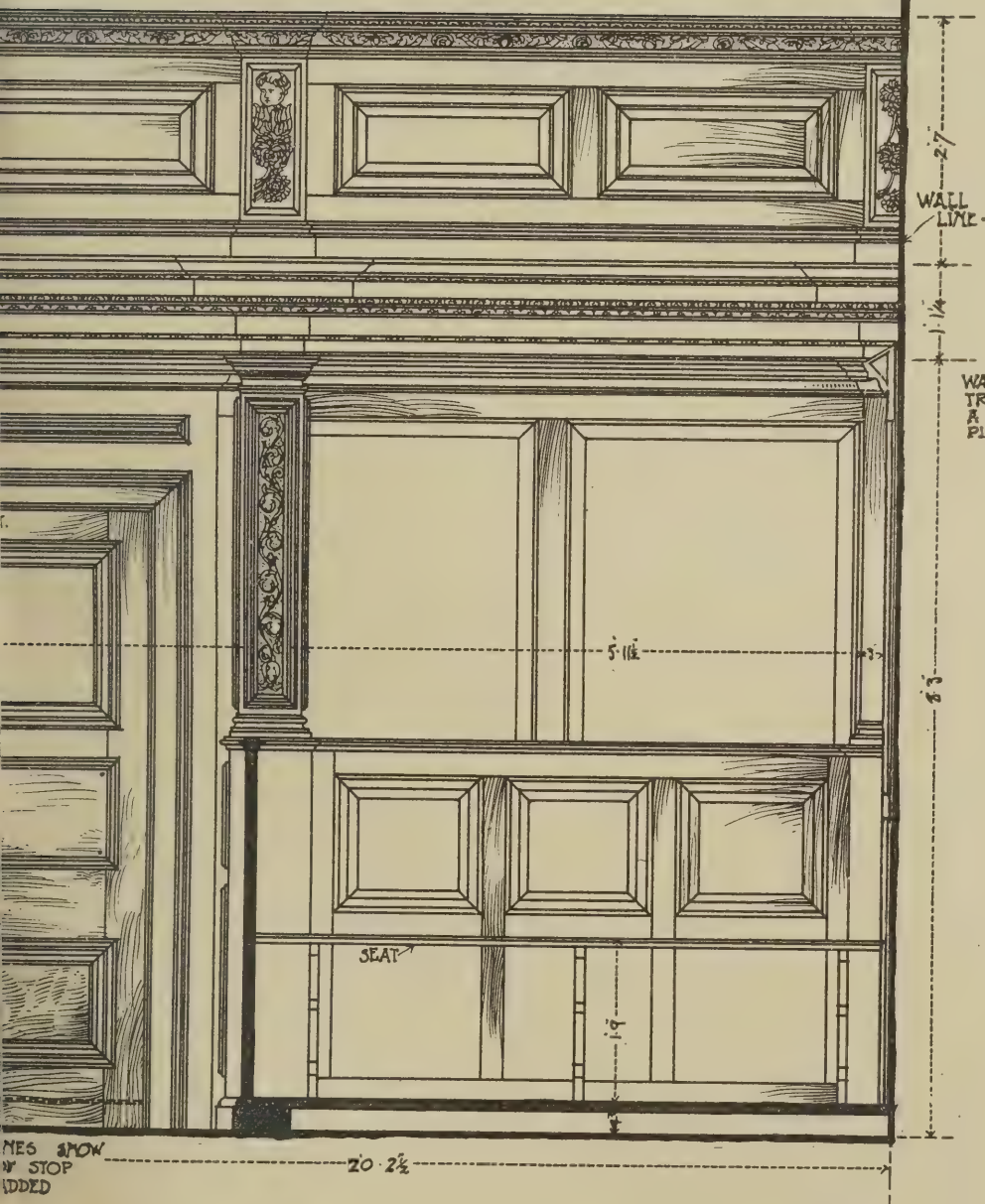
DO NOT
POST
RECE

SCALE OF 1" = 1'

MEASURED AND DRAWN

OF

DERN
D



WALL
LINE

WALL SURFACE IS
TREATED WITH
A THIN COAT OF
PLASTER . . .

NOTE: THE ORGAN LOFT
IS CONSTRUCTED
ENTIRELY OF WOOD
AND THE CARVED
PANELS ON SUPPORTS
AND ON FRONT OF LOFT
ARE OF GOOD RELIEF
AND EXCELLENT
CONDITION . . .

PANELS SHOW
NO STOP
ADDED

20'-2 1/2"

SEAT

1'-9"

FEET

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Earth-closets, Privies and Cesspools.—These I do not purpose to deal with.

Amendment Act, 1890.

Under this Act, which is adoptive at will by urban councils, by-laws have been framed as to paving of yards, height of rooms, scantlings of roof and floor timbers, and other matters; and in submitting plans in districts in which by-laws are in operation under the Act the following points should be noticed:—

Paved Yard.—Colour on plan the required space which it is proposed to pave. A common requirement is 150 sq. ft. immediately adjoining the house, and not less than 10 ft. wide from the wall of the house, but this varies in different districts.

Height of Rooms.—8 ft. is the all-round minimum here—in some cases this has been stretched to 8 ft. 6 in.—whilst attic rooms most not be less in any part than 5 ft., and for two-thirds of their area not less than 9 ft. high.

Roof and Floor Timbers.—It is best to figure these on the drawings to the scantlings given in the by-laws. None of these, it may be said, are excessive.

Consideration of Plans.

Councils are (under section 158 of the Public Health Act, 1875) bound to express their approval or disapproval of plans submitted to them within a month. Failing such approval or disapproval, it would seem that the local authority is precluded from enforcing penalties for breaches of the by-laws. In any event there is no need to delay commencing the work, as notice may be given immediately upon deposit of the plans, the only point being that the council has the right to pull down or alter the building if in contravention of the by-laws. It is always the safer method to await approval of plans before commencing, except when the express sanction of the surveyor can be obtained.

WATER-CLOSETS.*

By G. W. CHILVERS, F.I.S.E.

OF late years a great improvement has been made in regard to water-closets by the introduction of sanitary wings wherever possible, considerably simplifying the drainage and ventilation of these offices. In public buildings the accommodation has also been increased. But there is yet room for much improvement, particularly in private houses, where it is still the rule to find the water-closet on the staircase landing. It is of course much better, and by no means difficult, to arrange it in a more private position—one where a ventilating lobby may be introduced.

The by-laws insist on one external wall. If possible, it is better to have two, as the ventilation is more effectually provided and plenty of light may be obtained. The window should be as large as possible, and reach to the ceiling; it should be of the kind known as cased frames and sashes, both the latter made to open. The open gratings required by some by-laws are not to be advocated, in dwelling-houses at all events. They are generally inlets only, and assist in freezing the pipes in winter, while at night they cause a strong current of air into the house, which carries with it any foul air that may be in the closet. The ill effects of this current may be particularly felt in case of sickness. At night the sick-room is probably the only one having a fire in it. Being therefore the warmest in the house, the cold air is drawn to it from all other parts—a state of things which anyone who has had the misfortune to watch by a sick-bed will fully appreciate.

Walls and Partitions.

The walls, floors and ceilings should be made sound-proof and have impervious surfaces. All angles should be rounded. No projecting mouldings should be allowed, or if they are omit all quirks and other devices for holding dirt. One still finds wooden floors in use, although, under any circumstances, it creates very little extra expense to lay a concrete floor, and the surface may be made impervious by cement, mosaic, polished hardwood blocks or other similar means. The partition walls should never be of the ordinary lath-and-plaster kind, owing to their permeability and consequent liability to harbour microbes. They have, moreover, the undesirable quality of conducting sound. It may here be remarked that even with gin, enclosing walls sound may be easily conducted into adjoining rooms by leaving the holes cut by the plumber (or other tradesman) unstopped or improperly filled in behind the plaster or other finishing surface. The partition walls may be built solid in several ways, a variety of which will no doubt at once occur to you. When there is no wall below and the weight of the partition has to be suspended, or it becomes a question of floor-space, there are inexpensive forms now on the market to meet all requirements.

Finishings.

The wall-surfaces in public buildings are, for many reasons, best finished with glazed bricks. True, there are many joints, but if these are properly pointed they hold very little dirt, and the cost of maintenance is of no account, as the whole surface can be washed down. In private houses tiles, Opalite, or parian cement, and paint should always take the place of ordinary plaster. Where expense is an object there is now on the market an enamelled zinc which can be easily fixed.

The last twenty years have witnessed vast improvements in water-closet apparatus. The old pan closet, with its D trap, is almost extinct. Another kind which is, happily, being wiped out of existence is the old hopper closet, with its accumulation of filth on the inner surface and its dribbling supply of water.

The First Improvements

were the wash-out and plug closets. They were undoubtedly better than the older kind. But the accumulation of filth behind the basin in the one and around the plug in the other, and the impossibility of cleansing the trap with any reasonable amount of water, led sanitary engineers to devise the modern wash-down and valve closets. There are many variations of these in use and on the market, and improvements of them are constantly being made.

Omitting for the moment the valve closet, it may be said that all forms of water-closet requiring an enclosure ought to be barred from use by a by-law enforced in all districts.

The Pedestal Wash-down Closet

in one piece of earthenware is without doubt the best kind of water-closet for all purposes. A good pedestal closet is true in form, with an even and impervious surface, shaped so that the excreta drops clear of the sides into the water, has a large surface of water in the basin, a seal of about 2 in., and the flushing rim so arranged that every part of the basin is cleansed during the flushing operation. The water is directed in such a manner that its full force is brought to bear on the solids in the pan, forcing them into the trap at the commencement, so that the remainder of the flush may drive them through the drain.

There are certain of these closets on the market which, especially with a 3-gal. flush, create a perfect maelstrom in the basin. The ordinary observer remarks the force of the water and thinks what a fine apparatus he has. The more intelligent student, however, would notice the paper and excreta being

whirled about the basin, and then, just in the last effort of the flush, being carried out of sight. It is evident that in such a case the trap is never properly flushed until the next operation of the apparatus.

The outside of a pedestal closet should have an even surface, without the projecting ornaments often seen on them. Colour, white—both inside and out. In fact, there is no better finish for all surfaces in sanitary offices than white enamel of good quality, which is easily washed and shows at once any accumulation of dirt.

Syphonic Action.

Of the many improvements to these closets the syphonic is no doubt the most conspicuous, the principle being, as you are all aware, to draw out the excreta from the basin by syphonic action, instead of forcing it out as in the former case. The advantages seem to be greater force in flushing, and in most cases a double seal through the use of two traps to get syphonic action. The disadvantages are greater cost, more noise in flushing, and the closets generally require at least 3 gals. of water to make them act properly. The noise from the re-charging of the cistern has been overcome by silent-action ball-valves and the use of storage cisterns from which to draw the supply: that caused by the flushing action cannot altogether be obviated—but it only continues for a few seconds.

With regard to the flushing systems used in connection with pedestal closets it may be well to say at once that the simplest are generally the best.

The flushing pipes are an important item in obtaining a good flush. Their size, of course, varies with the height of the cistern above the basin. Generally speaking, all bends are to be avoided as much as possible, particularly sharp ones, and where they do occur the bore of the pipe must not be diminished.

A word about anti-syphonage pipes. As pedestal closets are frequently used in lieu of slop closets it is absolutely necessary, to prevent unsealing the trap, that these pipes should be fixed to them in every case, especially when there is a considerable drop to the drain level and large quantities of water or slops are thrown down the closet.

The Valve Closet

now demands our attention. It still survives. Whether it was a matter of "the survival of the fittest" is a question. Some of the advantages in its use, from a sanitary point of view, appear to be greater area and body of water in the basin, double seal of basin and trap, noiselessness of action, absence of pipes and flushing cistern, and the enclosure to receive draperies and give support.

The disadvantages are:—Much greater cost; enclosed mechanism to get out of order and harbour dirt and retain effluvia; less force of flush; the joint between soil-pipe and apparatus is out of sight, and is generally made with red lead; liability of the pan to become empty through valve leaking from matches, cigar ends, &c., getting on the seating.

Wherever water closets are fixed for the use of the general public, and in all business establishments, the pedestal closet is admittedly the best.

For dwelling-houses æsthetic people prefer to see a piece of cabinet-work enclosing the apparatus. Sanitarians advocate free access to all parts for cleansing purposes, and do not regard the water-closet as a piece of drawing-room furniture.

If a valve closet is used let it be one of the pedestal kind, which has all the advantages, while it reduces the disadvantages, and can also be used as a urinal.

Flush: The Inadequacy of 2 gals.

It is an axiom that the object of flushing is not merely to cleanse the pan but to flush

* Summary of a paper read before the Institute of Sanitary Engineers on March 2nd, 1904.

out the trap and drain as well and carry the whole of the matter at once into the sewer. The question at once arises, What is the minimum amount of water required to effect this, and what is the available supply? Sanitarians are unanimous in the opinion that the former should not be less than 3 gals. The authorities are somewhat indefinite in the wording of their by-laws on the subject made under the Public Health Acts, and mostly demand "a cistern of 'adequate' capacity for the effectual flushing of pan, basin or other receptacle, and for the prompt and effectual removal therefrom of any solid or liquid filth which may from time to time be deposited therein." It will be noticed that reference is only made to the "pan, basin or other receptacle," and not to the trap and drain beyond. A note in the Model By-laws on this subject reads: "The ordinary water-waste-preventing cistern answers the purpose efficiently if it is of adequate size, as, e.g., of 3 gals. capacity." If this is so, What amount is required to cleanse the trap and drain as well? It may here be noted that water companies have contended that they are required to supply water for domestic purposes, and not for flushing drains outside the house.

Unfortunately, although we are agreed that 3 gals. of water is the minimum amount required to flush a water-closet efficiently under any circumstances, we are met at the outset with the by-law made by the water companies under the Metropolitan Water Act, 1871, which limits the amount to a maximum of 2 gals. for each flush. Many of the provincial companies have adopted the same regulation.

The regulation limiting the supply to 2 gals. has now been in force over thirty years. During this time many experiments have been made, discussions have taken place and representations have been made to the water companies showing the total inadequacy of 2 gals. of water to flush a water-closet in an efficient manner. The most noteworthy and most elaborate of the experiments were those conducted by a Committee of the Sanitary Institute in 1893. After 800 experiments with apparatus erected for the purpose, the Committee recommended an alteration in the regulations of the water companies so as to read: "So constructed as to discharge not less than 3 nor more than $3\frac{1}{2}$ gals. of water at each flush." Other recorded experiments are those of Mr. A. B. Plummer, F.R.I.B.A., in conjunction with the Newcastle and Gateshead Water Co., and of Dr. Charles Porter at Stockport, the result being practically the same as that first described.

Such being the case, what can we do to alter the matter? As far as the London district is concerned, an exceptional opportunity is presented just now—and, on the face of it, a more favourable one than has occurred at any previous time during the last thirty years—of laying the claims of the public health before a new authority. I refer, of course, to the new Metropolitan Water Board.

If a well-considered memorial were laid before them on the subject of flushing water-closets there is no doubt it would receive the fullest attention by them. What more suitable body to present this petition than the Institute of Sanitary Engineers—consisting as it does of men actively engaged in designing and constructing these conveniences, and therefore well able to appreciate the present difficulty and to lay the claims of the public health before the Board in both a practical and scientific form. We ought not to let this opportunity pass—in fact, the Council of the Institute ask you to-night to unanimously carry a resolution authorizing them to approach the Board asking that the present limit of a 2-gal. maximum supply to water-closets may be

withdrawn in favour of one more in accordance with the requirements of present-day sanitation, pointing out that the efficiency of water-supply to closets is in the interest of public health as well as efficiency of supply for other purposes; also that an anomaly exists in the fact that an unlimited supply exists for bath and lavatory, which may be used as many times each day as desired. Yet a water-closet which a person only uses about once or twice in the same time is limited to 2 gals.

[The resolution was passed.]

Builders' Notes.

Messrs. Manlove, Allott & Co., Ltd., engineers, Nottingham, have just delivered two of Allott & Paton's patent high-pressure steam disinfectors for use on the latest Cunard steamers—the "Pannonia" and the "Slavonia."

The Home for Chronic Invalids, Wellington, New Zealand, is being warmed and ventilated by means of Shorland's double-fronted patent Manchester stoves with descending smoke flues, and Manchester grates, supplied by Messrs. E. H. Shorland & Brother, of Manchester. Messrs. Shorland have also supplied their grates to the new library at Nantylfyllon, Glam.

Ferro-Concrete Reservoirs.—In the paper on the Penzance water-supply works which he read before the last meeting of the Society of Engineers Mr. Frank Latham, M.I.C.E.I., borough engineer and surveyor, Penzance, described the service reservoir which has been built on the Hennebique ferro-concrete system. This he claimed to be the first of its kind that had received the approval of the Local Government Board.

The Limmer Asphalt Paving Co., Ltd., in its annual report for 1903 states that the following sums have been written off, namely:—Leamouth Wharf (plant and machinery), £346; buildings and plant in France, £278. There remains at credit of profit and loss £8,540, from which the directors propose to pay a dividend of 10 per cent. and a bonus of 1s. per share, which, with the bonus to directors, will amount to £6,668, and to carry forward £1,872.

Another Labour Dispute in New York has occurred. Ten thousand masons and helpers have left work in consequence of a dispute regarding the hours of labour. The masters insist upon ten hours a day and the men refuse to work more than eight. The Spring is the great building season, and many large contracts are now being executed. It is likely that other unions will strike in sympathy, and if they do building operations in New York will be badly delayed.

The Sheffield Works Construction Department was recently the subject of an address by Councillor George Fox. Dealing with the question of tendering, he said that the department had received no favour at the hands of the City Council and its committees. They had had to tender in the open market for the Corporation contracts, and the bulk of their work had been secured in this way. Altogether they had done £4,200 worth of work which they had got without competition, but the work they had secured by tender against private contractors amounted to over £12,000. In addition to this, they had tendered for work to the value of over £60,000 which had been given to other competitors, thus proving that they had only received the same treatment as outside contractors. At the present time they were only employing eighty-two men, whereas they had had as many as 220. He claimed that the department had fully justified its formation, and that it ought to be continued. A resolution was passed embodying this view.

The new Nurses' and Surgical Home at Windsor, established as a memorial to Prince Christian Victor, has been formed by remodelling four houses, the work having been carried out by Messrs. Hollis & Sons, of Windsor. The heating throughout the building and hot water for domestic use are supplied from one duplex water boiler which consumes its own smoke and prevents incrustation arising from the chalky nature of the water. The complete installation has been erected by Mr. Edward P. Milne, engineer, 15 Craven Street, Charing Cross, W.C.

Two Big Contracts.—The contract for the fireproof floors and roof of the Waring building on Oxford Street (Mr. R. Frank Atkinson, architect) has been given to the Columbian Fireproofing Co., Ltd., who are also carrying out the roof and coal-bunker construction at the new electricity generating station of the Underground Railway at Chelsea. These are the two largest and most important contracts ever let in London, as the Waring Building of its class will be the largest in Europe, and the Chelsea power station will surpass the Metropolitan Station in New York, which has the greatest horsepower total in the world.

A Painters' Exhibition.—At the annual dinner of the Association of Master-Painters in Scotland held at Glasgow recently Mr. James Higson, president of the English Association, said the latter had decided to hold their annual convention in Manchester in September next. They intended to hold an exhibition for the first time; this was to be open for about eight days in the largest hall they could get in Manchester, and they hoped to let space equal to a money value of £1,200. Although the prospectus had only been before the public two months £800 worth of that space had already been let. The profits were to be devoted to the maintenance of the National School of Decorative Painting. At their last convention in one afternoon a guarantee fund was raised to the amount of £1,000. The school had only been open a month but they had ten pupils.

Lead Poisoning and Water Pipes.—Mr. R. Pedley, writing to the "Yorkshire Post," says the water supplied by the Batley Corporation is to-day acting upon the lead pipes, and lead poisoning is going on: despite the floodgates. As to the suggested remedy of chalk, lime and Paris white, he observes that past experience in many districts proves that after the most precise mechanical liming of water, it still takes up lead; in support of which assertion he cites the case of the water-supply to Shelf, where an epidemic of lead poisoning occurred, though the water was admittedly soft and had been automatically treated with pure carbonate of lime and afterwards passed through a system of filtration. "Here, then, is a case where both lime and filtration have lamentably failed. Precisely the same results are being experienced by the Chesterfield Rural District Council."

Law Cases.

Mr. Allcott's Libel Action.—In the King's Bench Division of the High Court of Justice last week, Mr. Allcott, pavior and contractor, brought an action against Millers' Karri and Jarrah Forests' and Walter L. Green for alleged libel. Plaintiff's case was that the defendant company was competing with him for the paving of Oxford Street under the Marylebone Borough Council, and that the defendant Green, at the instance of the company, wrote advising the council, before accepting any tender, to examine the condition of the wood-paving in Piccadilly, Waterloo Place, Haymarket and Whitehall, which was laid down by the plaintiff and was in a rotten condition.—The jury returned a verdict for the plaintiff, assessing damages at £250.

Enquiries Answered.

The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Division Walls.

DORSET.—LOCUS STANDI writes: "The accompanying sketch shows two premises, belonging to A and B. There is a dispute as to whom the dividing wall belongs. B's premises have been erected much longer than A's, and the owner says that A encroached upon his wall when he raised the front of his building, which was formerly of two storeys. A wishes to erect a building at the rear of his premises and wants to use one side of the wall from 4 to 5. To whom does the wall belong, or what portions belong to A and B respectively, and how long is it necessary for the front building to have been erected so that the three storeys obtain a prescriptive right?"

Please understand that the following opinions are only founded upon the *prima-facie* evidences of your sketches, and that personal evidence as to ownership or user may easily prove to the contrary. (a) It appears to me that A did encroach 18 in. upon the front of B's building when he raised the third storey, though in this connection it would be well to enquire as to the possibility of the division wall being of a "party" character. (b) A's eaves-gutter from 2 to 3, and the down-right thereto, also form an encroachment upon B's land. (c) The wall from 2 to 3—3a to 4 and from 4 to 5 appears to belong to A (even though it overlaps B's property at the point marked 5). (d) The period necessary to confer a prescriptive right to any easement of this kind is twenty years (2 & 3 William IV., cap. 71, sect. 2), but inasmuch as the interruption, to defeat the twenty years' user, must be acquiesced in or submitted to for a whole year, for all practical purposes a title of nineteen years and a day is sufficient.

F. S. I.

Damp Patches in Houses.

HARPENDEN.—P. B. writes: "I am living in a house which has been built two years with local red bricks and Fletton wire-cuts inside. In damp weather wet patches occur, but in dry weather there is a fine white substance like acid, having a soda taste. On taking off the plaster I find that the brick is of a dark smoky colour, as if it had been near the fire in burning. I have tried silicates of every kind; I have also painted the walls, yet this substance eats through the paint and makes it run down the walls. I have tried petrifying liquids but no good has resulted."

I fear your case is not an isolated one, as the recent severe weather has caused dampness in many cases where houses have been passably dry hitherto. Are your walls built hollow, with iron ties? If so, I should suggest that the wet patches occur at places where mortar is lodged on a tie, forming a conductor from the outer to the inner skin. The efflorescence of which you speak will, I think, disappear after a time. Petrifying liquids upon the whole are disappointing, though I have had one or two cases where their use has very greatly mitigated dampness. They should of course be applied in the heat of the late summer, when the walls

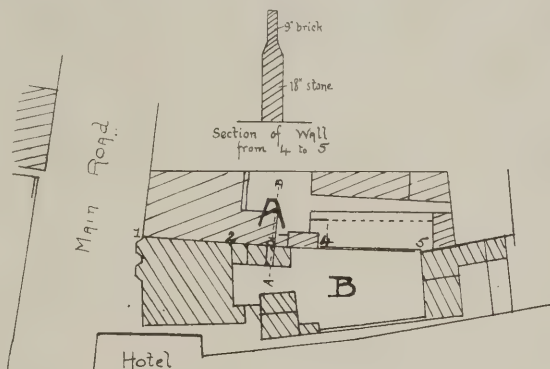
are as dry as possible. Repeated coats are needed. As apparently you have thoroughly tried these remedies and found them wanting, I can only suggest that you should "weather-tile" or slate the exposed portion of the walls. In unimportant cases—where appearance has not been of such consequence as economy—I have recently employed iron sheets in place of weather-tiling, fixing them to battens secured by plugs in the walls and painting the whole stone colour.

F. S. I.

Bridging between Joists.

LOWESTOFT writes: "Fir-framed bridging between 7 in. by 2 in. deal joists to take partitions over. What method of framing is correct?—joists in position."

The ordinary method is to frame the parti-



DIVISION WALLS.

tion into a sill, but where bridging is adopted it is usually similar to herring-bone strutting, though it is occasionally tenoned into the joists; but anything tending to weaken them, as this does, is not advisable, and we do not recommend it.

Erecting a Memorial Cross.

NEWCASTLE-ON-TYNE.—X. writes: "The accompanying tracing (not reproduced) shows roughly the form of a memorial cross which is shortly to be carried out from my designs. Having had no previous experience in the construction of work of this kind, I should be glad to know what would be the best way to make the work perfectly secure, more especially in regard to the base and head."

Your method is a possible one, but the proposal to carry the stem of the cross down below the stone steps, and let it into the base, is open to criticism. Firstly, it is not let far enough into the concrete to prevent the possibility of mischievous persons being able to overturn it, for the steps do not afford much protection. Then again, where the steps abut against the stem there must be a joint, and in course of years the rain running down the faces of the shaft, with the aid of frost, would open the joints sufficient for water to lie in them, which would offer a great danger of the frost splitting the stone. We think it would be best to stop the stone off at the top step and make it secure by passing a copper dowel with a rag bolt end down into the concrete.

Landscape Architecture.

HERTFORDSHIRE.—X writes: "An architect and surveyor who is developing building estates for clients takes considerable interest in the laying-out of the grounds. (1) Would it be worth while to follow up horticultural and landscape architecture as a branch of the business; and, if so, (2) would letters F.R.H.S. be of any value to the surveyor?"

(1) Certainly, several well-known architects design and lay out gardens. (2) We think they might be some slight assistance, though they are no guarantee of artistic merit.

War Office Schedule of Prices.

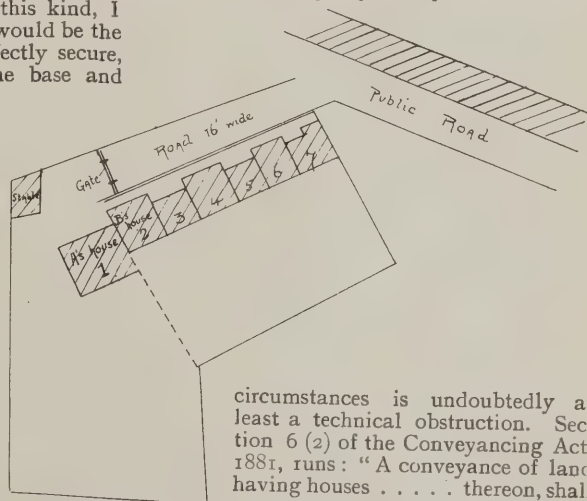
LONDON.—W. R. writes: "In your issue for January 27th a correspondent asks where he can obtain a schedule of prices of the War Office. I should also like to obtain one. Following your suggestion I applied to the War Office, and got an answer saying 'it was not supplied to private individuals.' If there is any other source where I can obtain it, I should be much obliged if you would let me know."

The schedule is only supplied to bona-fide contractors, who must pay for it, the amount being returned on receipt of a tender.

A Question affecting a Gate.

GLAMORGANSHIRE.—W. T. J. writes: "A leases a piece of ground as per accompanying sketch. He makes a road at his own expense and submits a block-plan of a terrace of houses, which is duly passed by the local authorities. He then builds some cottages which he subsequently sells outright, at the same time sub-letting different portions of the ground to the respective purchasers of the cottages. A also builds himself a house (1), and in order to keep it more private he erects a gate. Sub-lessee No. 2 (B) objects to the position of this gate as it is within the line of his house. Can he get it removed, in view of the fact that A pays ground rent for the whole of the roadway? There is no public approach to the houses."

I answer this in an alternative manner, in case I have misunderstood the circumstances. (a) If I understand that A sold the houses (or sold the structures and assigned the ground lease) numbered 2 to 7 on your sketch, when the roadway was fully open, and then erected the gate in front of No. 2 house, I think (unless something to the contrary appears in the deed of conveyance or contract for sale) that B is justified in calling for the removal of the gate, though it might possibly be a question for a court to decide as to whether B is substantially injured by what in those



circumstances is undoubtedly at least a technical obstruction. Section 6 (2) of the Conveyancing Act, 1881, runs: "A conveyance of land having houses . . . thereon, shall . . . operate to convey . . . all . . .

areas, courts, . . . ways, passages, . . . liberties, privileges, easements, rights and advantages appertaining or reputed to appertain to the land, houses or buildings conveyed." (b) If I understand that A is still the first lessee (under the freeholder) of the whole of the land shown on your sketch, and that B is a sub-lessee under A, I am still of opinion that if the sub-lease were granted before the erection of the gate, B is entitled to have it removed, because a lessor may not "derogate from his own grant" and cannot therefore do anything to injure the amenities of the property he has let on sub-lease. Judging from

the sketch, it would not be a great thing for A. to move his gate back 8ft. or 9ft. to set the whole question at rest, and I advise him to do so rather than to have a lawsuit (with at best a doubtful result) with B. B's course of action will probably be to remove the gate forcibly, and so place upon A the onus of becoming plaintiff in the action and thereby under the necessity of "proving his case." F. S. I.

Sash Window Sills.

HALIFAX.—QUESTIONER writes: "Should sash window sills be of red wood, pitch-pine, oak, teak or other wood for durability?"

Red wood (or ordinary yellow pine as known in London) is only suitable for the cheapest class of property; pitch-pine is liable to crack; oak is generally used, and is the most suitable; teak would be good, but is expensive, and for this reason is not used.

Keystones.

The new Regulations for Theatres have been approved by the London County Council.

Sheffield Town Hall Extension.—Mr. E. W. Mountford, F.R.I.B.A., has prepared plans for the proposed extension of Sheffield town hall at an estimated cost of £36,000.

Mr. P. P. Story, chief engineering assistant in the offices of the City Surveyor of Manchester, has been appointed by the Education Committee of the Surrey County Council as their surveyor of school buildings.

Cardiff Overbuilt.—At a Local Government Board enquiry it was stated that Cardiff was much overbuilt and that the houses now empty would provide sufficient accommodation for the next five years.

County Education Architect for Carmarthenshire.—Mr. William D. Jenkins, M.S.A., 2, Bank Terrace, Llandilo, South Wales, has been appointed to this post, not Mr. Arthur S. Williams, as reported in our issue of last week.

Back Numbers of "Specification."—During the past few weeks many readers have asked us to supply them with complete sets of "Specification," but this we are unable to do. The only copies we have left are a few of "No. 5" and "No. 6" and five copies of "No. 3." The limited edition of "No. 7"—the current issue—is being rapidly exhausted also, and all those desirous of obtaining this and Nos. 3, 5 and 6 should apply at once to the publisher, Great New Street, E.C., to avoid disappointment.

The Glasgow Institute of Architects gave a complimentary dinner to Mr. John Honeyman, R.S.A., last week. The president, Mr. Horatio K. Bromhead, F.R.I.B.A., in proposing Mr. Honeyman's health, said they had great pleasure in thus conveying to him their congratulations on his coming jubilee of fifty years' practice on his own account in Glasgow, he having commenced in 1854, and being prominent in connection with the formation of the Archaeological Society; he was elected in 1876 a member of the Council of the Royal Institute or British Architects, and was re-elected in 1878 and 1884. He was one of the original members of the Glasgow Institute of Architects, of which he was vice-president from 1876 to 1878 and president in 1881 and 1882. Mr. Campbell Douglas and Mr. Keppie also spoke. Mr. Honeyman, in replying, mentioned that he started life in a merchant's office. He afterwards went to London, and then began for himself in Glasgow. His first commission was the Free West Church in Greenock. In 1858 he read a paper before the Architectural Society on the drainage of Glasgow, and in it were drawings for a special trap which was the original of the Buchan trap.

A Presentation to Prof. F. M. Simpson—in the form of a testimonial—has been made by the Liverpool Architectural Society.

Aberdeen Society of Architects.—Office-bearers and council for the current year have been elected as follows:—President, Mr. A. Clyne; vice-president, Mr. R. G. Wilson; hon. treasurer, Mr. Rust; joint hon. secretaries, Mr. Rust and Mr. A. H. L. Mackinnon; members of council—Messrs. William Kelly, H. MacLennan, G. B. Mitchell, J. B. Nicol and George Watt.

A Sheffield Church Competition.—It is likely that before very long Sheffield Methodism will have a central hall for mission purposes. A limited number of architects were recently invited to furnish designs for a site in Norfolk Street. Mr. E. M. Gibbs, of Sheffield, has been appointed assessor. The new premises are to include a hall for mission services larger than the halls in Birmingham, London or Bolton, and to accommodate 2,500 adults. There will also be a smaller hall capable of seating 500 people. Ten architects are competing. It is estimated that the cost, inclusive of the value of the site and furnishing, &c., will exceed £38,000.

Sheffield Society of Architects and Surveyors.—At last week's meeting Mr. J. R. Wigfull, A.R.I.B.A., one of the local secretaries for the congress held in Sheffield last August, gave a lecture entitled "In Worksop and neighbourhood with the British Archaeological Association." Selecting the churches of Blyth, Worksop and Steetley, he said they were all of the Norman period and formed excellent examples for the study of that style, as they embraced all the phases of the style from the somewhat rude and archaic work of Blyth to the perfected and semi-transitional work at Worksop. The latter, however, suffered extensively when the church was "thoroughly restored" in 1847. Most of the original features were then so re-worked or replaced by new material as to give the idea at first of a new church; but some features of interest remained, notably the thirteenth-century chapel and the beautiful ironwork on the south doorway.

Glasgow Architectural Association.—Prof. Charles Gourlay, B.Sc., A.R.I.B.A., I.A., lecturer on architecture and building construction in the Glasgow and West of Scotland Technical College, delivered a lecture on "Athens and its Architecture" before the last meeting of this Association. The lecturer gave the impressions he formed while studying architecture in Athens last year. Describing first the buildings on the Acropolis—the Parthenon, the Propylæa, the temple of Nike Apteros and the Erechtheum—Professor Gourlay passed on to the buildings on the plain, including the Theseum, the Choragic Monument of Lysicrates, with its hexagonal plan, and the stelæ in the Ceramicus and the National Museum; the Olympeum and the Horologium of Andronicus Cyrrhestes as owing their existence to foreign patrons of the city; then the work of the Roman period in Athens, as may be seen in the gate to the Agora, the monument of Philopappus, the arch and the library of Hadrian (the latter with its colour obtained by the use of different-coloured marbles instead of by painting the marbles according to the ancient Greek practice). The work of the Christian period was next referred to, particularly that to be found in the churches of St. Nicodemus, the Saints Theodore, the Kapnikarea and the small Metropolis. Lastly, modern work as exhibited in the Academy of Science, the University and the Library—all on the University Boulevard; also the modern cathedral, the Royal Palace, the Observatory and the Zappeum.

Another Discovery in the Roman Forum was made last Thursday by Commendatore Boni—the foundation-stone of the equestrian statue of Domitian at one side of the huge concrete base of the statue discovered early last autumn. In the lower block a square chamber was discovered containing five terracotta vases, one of considerable size.

Current Market Prices

		£	s.	d.	£	s.	d.
FORAGE.							
Beans ..	per qr.	1	14	0	2	0	0
Clover, best ..	per load	4	0	0	4	7	6
Hay, good ..	do.	3	12	6	4	0	0
Sainfoin mixture ..	do.	3	12	6	4	2	6
Straw ..	do.	1	10	0	2	0	0
OILS AND PAINTS.							
Castor Oil, French ..	per cwt.	1	0	5	—	—	—
Colza Oil, English ..	do.	1	3	6	—	—	—
Copperas ..	per ton	2	0	0	—	—	—
Lard Oil ..	per cwt.	2	15	0	2	17	0
Lead, white, ground, carbonate ..	do.	1	4	10	—	—	—
Do. red ..	do.	1	0	44	—	—	—
Linseed Oil, barrels ..	do.	0	16	9	—	—	—
Petroleum, American ..	per gal.	0	0	7½	0	0	7½
Do. Russian ..	do.	0	0	5½	0	0	7½
Pitch ..	per barrel	0	8	0	—	—	—
Shellac, orange ..	per cwt.	10	4	0	10	9	0
Soda, crystals ..	per ton	3	2	6	3	5	0
Tallow, Town ..	per cwt.	1	6	6	1	6	9
Tar, Stockholm ..	per barrel	1	2	0	—	—	—
Turpentine ..	per cwt.	2	3	3	2	3	6
METALS.							
Copper, sheet, strong ..	per ton	70	0	0	—	—	—
Iron, Staffs., bar ..	do.	6	0	0	8	10	0
Do. Galvanised Corrugated Sheet ..	do.	10	5	0	10	7	6
Lead, pig, Soft Foreign ..	do.	11	17	6	12	0	0
Do. do. English common brands ..	do.	12	5	0	—	—	—
Do. sheet English 3lb. per sq. ft. and upwards ..	do.	14	0	0	—	—	—
Do. pipe ..	do.	15	0	0	—	—	—
Nails, cut clasp, 3 in. to 6 in. ..	do.	9	5	0	—	—	—
Do. floor brads ..	do.	9	0	0	—	—	—
Steel, Staffs., Girders and Angles ..	do.	5	10	0	6	5	0
Do. Mild bars ..	do.	6	0	0	6	5	0
Tin, Foreign ..	do.	125	17	6	126	7	6
Do. English ingots ..	do.	127	10	0	129	0	0
Zinc, sheets, Silesian ..	do.	24	5	0	—	—	—
Do. do. Vienne Montaigne ..	do.	24	10	0	—	—	—
Do. Spelter ..	do.	21	15	0	22	5	0
TIMBER.							
SOFT WOODS.							
Fir, Dantzic and Memel ..	per load	1	13	0	3	0	0
Pine, Quebec, Yellow ..	do.	5	5	0	6	5	0
Do. Pitch ..	do.	2	11	0	2	16	0
Laths, log, Dantzic ..	per fath.	4	10	0	5	10	0
Do. Norrköping ..	per bundle	0	0	7½	—	—	—
Deals, Onego, White, and, 3 x 11 per std. ..	do.	10	0	0	—	—	—
Do. Puget Oregon Pine, Unsorted, 6 x 14 ..	do.	12	5	0	—	—	—
Do. do. 6 x 11 ..	do.	12	0	0	—	—	—
Do. do. 5 x 14 ..	do.	12	5	0	—	—	—
Do. Petschora, Yellow, 3rd, 3 x 11 ..	do.	8	10	0	—	—	—
Do. Soroka, Yellow, 3rd, 3 x 7 ..	do.	10	0	0	—	—	—
Do. Archangel, White, 1st, 3 x 9 ..	do.	11	15	0	—	—	—
Do. Sulina Bosnian, White, 1st & 2nd, 3 x 9 ..	do.	8	0	0	8	15	0
Do. Pentecost, Bright Spruce, Unsorted, 3 x 9 x 12ft. ..	do.	8	10	0	—	—	—
Do. Quebec, Yellow Pine, 4th, do. ..	do.	10	5	0	—	—	—
Do. do. do. 3 x 11 x 13ft. ..	do.	9	5	0	—	—	—
Do. Montreal, Red Pine, 1st, 3 x 6 ..	do.	11	5	0	—	—	—
Do. do. 4th, 3 x 11 ..	do.	9	0	0	—	—	—
Battens, all kinds ..	do.	6	5	0	12	5	0
Scantlings ..	do.	6	1	0	9	15	0
Flooring Boards in. prepared, 1st ..	per square	0	11	9	0	12	0
Do. 2nd ..	do.	0	8	0	0	11	0
Do. 3rd, &c. ..	do.	0	7	9	0	8	6
HARD WOODS.							
Ash, Quebec ..	per load	3	12	6	—	—	—
Birch, Miramichi, Planks, 3 x 5 to 16 in. ..	per cu. ft.	0	0	11½	—	—	—
Box, Turkey ..	per ton	15	0	0	20	0	0
Cedar, Cuba ..	per ft. sup.	0	0	4½	—	—	—
Do. Honduras ..	do.	0	0	4½	—	—	—
Do. Tobasco ..	do.	0	0	5½	—	—	—
Elm, Quebec ..	per load	4	2	6	—	—	—
Mahogany, Average Price for Cargo, Honduras ..	per ft. sup.	0	0	6½	—	—	—
Do. African ..	do.	0	0	4½	—	—	—
Do. St. Domingo ..	do.	0	0	3½	—	—	—
Do. Cuba ..	do.	0	0	6½	—	—	—
Do. Lagos ..	do.	0	0	3½	—	—	—
Do. Benin ..	do.	0	0	4½	—	—	—
Do. Tobasco ..	do.	0	0	7½	—	—	—
Oak, Libau, Crown Wainscot logs ..	per load	2	15	0	—	—	—
Do. Fiume round logs ..	do.	3	7	0	—	—	—
Do. Quebec ..	do.	4	10	0	—	—	—
Teak, Rangoon, planks ..	do.	8	0	0	15	10	0
Do. do. logs ..	do.	11	5	9	—	—	—
Do. Indian planks ..	do.	12	5	5	—	—	—
Do. Moulmein logs ..	do.	6	10	0	8	0	0

Complete List of Contracts Open.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
BUILDING:			
Mar. 17	Coggeshall, Essex—Alterations, &c.	Heart-in-Hand Industrial Co-operative Society, Ltd.	J. W. Clark, Architect, Coggeshall.
" 17	Edinburgh—Bowl House	—	R. Morham, Public Works Office, City Chambers, Edinburgh.
" 17	Filmby, Cumberland—Rebuilding Farm Buildings	—	S. D. S. Dodgson, Somerset House, Whitehaven.
" 17	Glasgow—Convenience	Corporation	J. Lindsay, Clerk, City Chambers, Glasgow.
" 17	Gomersal, Yorks—Restoring Mill	—	W. H. D. Horsfall, 6 Harrison Road, Halifax.
" 17	Uxbridge—Staircases	Guardians	W. L. Eves, 54 High Street, Uxbridge.
" 17	Reading—Lime and Cement	Corporation	J. Bowen, Borough Surveyor, Town Hall, Reading.
" 17	London, N.—Sorting Office	Commissioners of H.M. Works, &c.	Secretary, H.M. Office of Works, Storey's Gate, London, S.W.
" 17	Surbiton—Baptist Chapel	—	A. Mason, Architect, Broughton Chambers, Surbiton.
" 17	Great Float, near Birkenhead—Roof Boarding, &c.	Wallasey U.D.C.	J. H. Crowther, Engineer, Great Float, near Birkenhead.
" 17	Dundalk—Additions to Church	—	W. H. Byrne & Son, 20 Suffolk Street, Dublin.
" 18	Croydon—Refuse Destructor	Borough Council	G. F. Carter, Borough Engineer, Town Hall, Croydon.
" 18	Wimbledon—Cement and Lime	Urban District Council	Surveyor, Council Offices, Wimbledon.
" 18	Branksome, Dorset—Fitting-up Library, &c.	—	S. J. Newman, Architect, Council Buildings, Branksome.
" 18	Sea View, Isle of Wight—Coastguard Buildings	Admiralty	Superintending Engineer, H.M. Dockyard, Portsmouth.
" 18	Weston-super-Mare—Warehouse	Lebond Brothers & Parham	H. Price & W. Jane, Architects, Waterloo Pl., Weston-super-Mare.
" 18	Alderney, Channel Islands—Signal Station	Admiralty	Superintending Civil Engineer, H.M. Breakwater Wrks., Portland.
" 18	Leeds—Foundations	—	City Engineer, Leeds.
" 18	Greenwich—Cement and Lime	Borough Council	Borough Surveyor, Town Hall, Greenwich Road, S.E.
" 18	Sheffield—Free Library	City Council	H. L. Paterson, 19 St. James Street, Sheffield.
" 19	Clavering, Essex—Footbridge	Saffron Walden R.D.C.	H. Smith, Ashdon Road, Saffron Walden.
" 19	Eccles, Lancs—Walls, &c.	Corporation	T. S. Picton, Borough Surveyor, Eccles, Lancs.
" 19	Haverfordwest—House	—	Mr. James, Three Crowns, High Street, Haverfordwest.
" 19	Clun—Two Dwelling-Houses, &c.	—	R. R. Macdonald, 16 Union Terrace, Aberdeen.
" 19	Lancaster—Wall	Streets Committee	J. C. Mount, Borough Surveyor, Lancaster.
" 19	Lancaster—Abutments, &c.	Streets Committee	J. C. Mount, Borough Surveyor, Lancaster.
" 19	Morecambe—Shelter, &c.	Corporation	J. Bond, Borough Surveyor, Morecambe.
" 19	New Tredegar, Wales—House, &c.	—	G. Kenshole, Architect, Station Road, Bargoed.
" 19	Weston-super-Mare—Rebuilding	W. Lever	S. J. Wilde & Fry, Boulevard Chambers, Weston-super-Mare.
" 19	Clones—Additions and Improvements to Church	L. J. C. O'Neill	W. A. Scott, 72 Hollybank Road, Drumcondra, Dublin.
" 19	Oulton, Lowestoft—Fire-escape Staircases	Guardians	R. S. Cockrill, Architect, Crossley House, Lowestoft.
" 21	Antrim, Ireland—Schools	—	W. J. Fennell, 2 Wellington Place, Belfast.
" 21	West Heath, near Birmingham—Pavilion	King's Norton U.D.C.	A. W. Cross, 23 Valentine Road, King's Heath.
" 21	Aberbeeg, Wales—Twenty Houses	Tir Graig Building Club	M. Gorman Rosslea, Llanbilleth.
" 21	Exmouth—House	G. F. Perriam	E. E. Ellis, Architect, Exmouth.
" 21	Exmouth—Alterations and Additions to Shops	W. F. Haymes	E. E. Ellis, Architect, Exmouth.
" 21	Paisley, Scotland—Culvert	Town Council	J. Lee, 13 Gilmour Street, Paisley.
" 21	Sengheneth, Wales—Four Shops, &c.	Industrial Co-op. Society, Ltd.	G. L. Watkins, Architects, Station Terrace, Caerphilly.
" 21	Bishop Auckland—Bricks	Rural District Council	J. Heslop, Surveyor, Cookton House, Bishop Auckland.
" 21	Doncaster—Police Station	West Riding County Council	J. V. Edwards, County Architect, Wakefield.
" 21	Mallow—Sixteen Dwellings	Urban District Council	B. E. F. Sheehy, 57 George Street, Limerick.
" 22	Abercarn, Wales—Twenty-eight Workmen's Dwellings	Abercarn Urban Council	J. Williams, Engineer, Council Offices, Abercarn.
" 22	London, N.E.—Conveniences	London County Council	Architect's Department, 15 Pall Mall East, S.W.
" 22	Grangetown, Yorks—Subway, &c.	Eston U.D.C.	C. McDermid, Surv., Council Offices, Grangetown, R.S.O., Yorks.
" 22	London, N.E.—Wards	Bethnal Green Guardians	W. A. Finch, 76 Finsbury Pavement, E.C.
" 22	Manchester—Two Lavatories (two Contracts)	Sanitary Committee	City Surveyor, Town Hall, Manchester.
" 22	Walsall—Bricks and Cement	Rural District Council	F. W. Mager, District Surveyor, Rushall, near Walsall.
" 22	Kirkby Stephen, Westmorland—Bank	Bank of Liverpool, Ltd.	J. F. Curwen, 26 Highgate, Kendal.
" 22	Cheltenham—Cement, &c.	Corporation	J. S. Pickering, Borough Surveyor, Municipal Offices, Cheltenham
" 22	Heaton, Newcastle-on-Tyne—Additions to Carriage Works	North-Eastern Railway	W. Bell, Architect, Central Station, Newcastle-on-Tyne.
" 22	Chippling Norton—Infirmary	Guardians	C. Smith & Sons, 164 Friar Street, Reading.
" 24	Aston, Birmingham—Bricks	Stores Committee	G. H. Jack, Borough Surveyor, Council House, Aston Manor.
" 24	Burslem—Public Conveniences	Corporation	F. Bettany, Borough Surveyor, Municipal Offices, Burslem.
" 25	Rame Head, near Plymouth—Coastguard Buildings	Admiralty	Superintending Civil Engineer, H.M. Dockyard, Devonport.
" 25	Kilfinane, Ireland—Convent	St. Paul's Convent Committee	B. E. F. Sheehy, 57 George Street, Limerick.
" 26	Garlands, near Carlisle—Additions to Asylum	Asylum Committee	C. W. A. Hodgson, Clerk, The Courts, Carlisle.
" 26	Birkenhead—Sanitary Towers, &c.	Guardians	E. Kirby, 5 Cook Street, Liverpool.
" 28	Drogheda, Ireland—Library	Public Library Committee	J. B. Connolly, Hon. Secretary, Court House, Drogheda.
" 28	Goxhill, Lincs—House	—	H. C. Scapling, Architect, Grimsby.
" 31	Whitehead—Church	—	J. J. Phillips & Son, 61 Royal Avenue, Belfast.
ENGINEERING:			
Mar. 17	Londonderry—Electric Plant, &c.	Dist. Lunatic Asylum Committee	R. V. Macrory, Consulting Engineer, Strand, Londonderry.
" 17	Londonderry—Heating	Wallasey Urban District Council	M. A. Robinson, Engineer, Richmond Street, Londonderry.
" 17	Great Float, near Birkenhead—Gas Purifiers	Government of New Zealand	J. H. Crowther, Engineer, Great Float, near Birkenhead.
" 17	Christchurch, New Zealand—Electrical Tramways	—	Agent-General for New Zealand, Victoria Street, London.
" 18	Branksome—Heating Apparatus	Urban District Council	S. J. Newman, Architect, Council Buildings, Branksome.
" 18	Kettering—Valves, &c.	Corporation	T. R. Smith, Engineer, Market Place, Kettering.
" 18	Harrogate—Sewage Purification Works	Urban District Council	E. W. Dixon, 5 Prospect Crescent, Harrogate.
" 19	Rugby—Tank, &c.	Corporation	D. G. Macdonald, Surveyor, Rugby.
" 19	Plymouth—Electricity Meters, &c.	Gas and Water Co.	E. G. Okell, Borough Electrical Engineer, Prince Rock, Plymouth.
" 19	Flemingsdown, near Bridgend—Reservoir, &c.	Gas Committee	T. Rees, Corn Exchange Chambers, Newport, Mon.
" 19	Manchester—Tar and Liquor Tanks, &c.	Gas Committee	C. Nickson, Superintendent, Gas Dept., Town Hall, Manchester.
" 19	Preston—Condensing Plant	Tramways Committee	W. H. Tittensor, 25 Burrow Road, Preston.
" 20	Bridgend, Wales—Reservoir, &c.	Gas and Water Co.	T. Rees, Corn Exchange Chambers, Newport, Mon.
" 21	Glasgow—Tramways	Corporation	J. Young, 88 Renfield Street, Glasgow.
" 21	Lincoln—Electric Plant	Corporation	S. Clegg, Electricity Works, Brayford Side North, Lincoln.
" 21	Newport, Mon.—Electrical Plant	Corporation	H. C. Bishop, Borough Electrical Engineer, Town Hall, Newport.
" 21	Cape Clear, co. Cork—Breakwaters, &c.	Guardians	Assistant Surveyor, 1 River View, Summerhill, Cork.
" 21	Leeds—Bollers	Joint Board	T. Winn & Sons, 92 Albion Street, Leeds.
" 21	Portadown and Banbridge, Ireland—Waterworks	Urban District Council	W. Wilson, Clerk, Town Hall, Portadown.
" 21	Ilford—Electrical Plant	Eston Urban District Council	J. W. Benton, Clerk, Town Hall, Ilford.
" 22	Grangetown, Yorks—Steel Girder Bridge	London County Council	C. McDermid, Surveyor, Council Offices, Grangetown, R.S.O., Yorks.
" 22	Greenwich—Electric Crane	Metropolitan Asylums Board	County Hall, Spring Gardens, S.W.
" 22	Leavesden, near Watford—Fire Alarms, &c.	Corporation	T. D. Mann, Secretary, Board's Offices, Embankment, E.C.
" 22	Chorley—Gas Exhauster, &c.	Municipality	J. W. Allin, Gas Engineer, Chorley.
" 22	Liège—Heating, &c.	Urban District Council	J. Riga, Secrétaire Communal, Liège.
" 22	Twickenham—Pumping Engines, &c.	Urban District Council	F. W. Pearce, Surveyor, Town Hall, Twickenham.
" 23	Twickenham—Bollers, &c.	Urban District Council	F. W. Pearce, Surveyor, Town Hall, Twickenham.
" 26	Dartford—Light Railways	Urban District Council	Hawthorne & Zed, 9 Queen Street Place, London, E.C.
" 26	Chelmsford—Waterworks	Corporation	C. Brown, 16 London Road, Chelmsford.
" 26	Rugby—Refuse Destructor	Urban District Council	D. G. Macdonald, Engineer, High Street, Rugby.
" 28	Ware, Herts—Waterworks	Rural District Council	Bailey-Denton, Lawford & Symons, 9 Bridge St., Westminster, S.W.
" 28	Floriaton and Nethercleugh—Steel Work, Superstructures of Bridges	Caledonian Railway Co.	Company's Divisional Engineer, Prince's Street Station, Edinburgh.
" 29	West Hartlepool—Esplanade Wall	Corporation	N. F. Dennis, Borough Engineer, West Hartlepool.
" 29	Biggleswade—Waterworks (3 Contracts)	Urban District Council	G. F. Deacon, 16 Great George Street, Westminster, S.W.
IRON AND STEEL:			
Mar. 17	Cardiff—Girders, &c.	Corporation	C. H. Priestley, Waterworks Engineer, Town Hall, Cardiff.
" 17	Leeds—Castings	—	City Engineer, Leeds.
" 17	Newport, Mon.—Tramways, &c.	Corporation	R. H. Haynes, Borough Engineer, Town Hall, Newport.
" 17	Uxbridge—Iron Staircases	Guardians	W. L. Eves, 54 High Street, Uxbridge.
" 17	Warrington—Hurdles	Streets Improvement Committee	T. Longdin, Borough Surveyor, Town Hall, Warrington.
" 18	Wimbledon—Tools, &c.	Urban District Council	Engineer, Council Offices, Wimbledon.
" 18	London, E.C.—Railway Stores	Burma Railways Co., Ltd.	Co.'s Offices, 76 Gresham House, Old Broad Street, E.C.
" 18	Leeds—Bandstand Superstructures	Borough Council	City Engineer, Leeds.
" 18	Greenwich—Ironmongery, &c.	—	Borough Surveyor, Town Hall, Greenwich Road, S.E.
" 19	Dublin—Stores	—	Mountjoy Prison, Dublin.
" 19	Preston, Lancs—Stores	Harbour Trustees	Engineer, Ribble Navigation Offices, Preston.
" 19	Dundee—Sheet Steel	Town Hall Committee	J. Thompson, Harbour Engineer, Dundee.
" 21	Manchester—Railing	Gas Company	City Architect, Town Hall, Manchester.
" 31	Barking—Pipes, &c.	Gas Committee	W. B. Reidie, Gasworks, Barking.
" 31	Devonport—Pipes, &c.	—	S. E. Stevenson, Engineer, Gasworks, Devonport.

Complete List of Contracts Open — continued.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
PAINTING AND PLUMBING:			
Mar. 17	Reading—Oils, Paints, &c.	Corporation	J. Bowen, Borough Surveyor, Town Hall, Reading.
" 17	Midland Railway—Printing, &c., to Stations	Midland Railway Co.	Company's Architect, Cavendish House, Derby.
" 18	Wimbledon—Oils and Paints	Urban District Council	Engineer, Council Offices, Wimbledon.
" 18	Greenwich—Oils, Paints, Colours, &c.	Borough Council	Borough Surveyor, Town Hall, Greenwich Road, S.E.
" 19	Dublin—Paints, &c.	Corporation	Mountjoy Prison, Dublin.
" 19	Preston, Lancs—Paints, Oils and Varnish	Corporation	Engineer, Ribble Navigation Offices, Preston.
" 21	London, W.—Painting, &c.	St. Marylebone Guardians	A. S. Snell, 2 Southampton Buildings, Chancery Lane, W.C.
" 22	Leeds—Cleaning and Painting	—	City Engineer, Leeds.
" 23	Rotherham—Paints and Varnishes	—	Tramways Manager, Tram Depot, Rotherham.
" 29	London, N.—Painting at Baths	Islington Borough Council	J. P. Barber, Borough Engineer, Town Hall, Upper Street, N.
ROADS AND CARTAGE:			
Mar. 17	Castleford, Yorks—Street Improvement Works	Urban District Council	W. Green, Surveyor, Castleford.
" 17	Stockport—Private Street Works	Highways & Sewers Committee	J. Atkinson, Borough Surveyor, Stockport.
" 17	Reading—Materials	Corporation	J. Bowen, Borough Surveyor, Town Hall, Reading.
" 18	Godstone, Surrey—Materials	Rural District Council	J. G. Powell, Surveyor, Godstone.
" 18	Greenwich—Materials	Borough Council	Borough Surveyor, Town Hall, Greenwich Road, S.E.
" 18	Wimbledon—Granite	Urban District Council	Surveyor, Council Offices, Wimbledon.
" 18	Abergavenny—Stone, &c.	Rural District Council	J. Gill, 4 Brecon Road, Abergavenny.
" 18	Hull—Stone	Corporation	A. E. White, City Engineer, Town Hall, Hull.
" 18	Moss Side, Manchester—Materials	Urban District Council	H. B. Longley, Engineer, Council Offices, Moss Side.
" 19	Newport, Mon.—Road	—	T. Rees, Corn Exchange Chambers, Newport, Mon.
" 19	Rothwell, Yorks—Materials	Urban District Council	J. T. Pears, Surveyor, Council Offices, Rothwell, near Leeds.
" 19	Rye, Sussex—Materials, &c.	Corporation	H. J. Elliott, Highway Surveyor, Winchelsea, Sussex.
" 19	Burnley—Paving, &c.	Rural District Council	Borough Surveyor, Burnley.
" 19	Driffield, Yorks—Materials	Rural District Council	T. C. Beaumont, Surveyor, Driffield.
" 19	Horsham—Materials, &c.	Rural District Council	W. Dengate, 58 Park Street, Horsham.
" 19	Lancaster—Forming, &c.	Streets Committee	J. C. Mount, Borough Surveyor, Lancaster.
" 19	Selby, Yorks—Road Materials, &c.	Rural District Council	E. Townend, 1 Abbey Place, Selby.
" 19	Hoyle, Cheshire—Materials	Urban District Council	F. Foster, Surveyor, District Council Offices, Hoyle.
" 21	Blaby, Leicester—Granite	Rural District Council	G. E. Bouskell, 27 Friar Lane, Leicester.
" 21	Maldstone—Materials	Urban District Council	T. F. Bunting, Borough Surveyor, Fair Meadow, Maidstone.
" 21	Nelson, Lancs—Street Works	Sewerage & Streets Committee	B. Ball, Borough Surveyor, Nelson, Lancs.
" 21	Southampton—Flints and Granite	Corporation	J. A. Crowther, Borough Engineer, Market Chambers, Southampton.
" 21	Nelson, Lancs—Materials	Plans and Building Committee	B. Ball, Borough Surveyor, Nelson, Lancs.
" 21	Pontypridd—Private Street Works	Urban District Council	P. R. A. Willoughby, Surveyor, Pontypridd.
" 21	Dover—Street Improvements	Town Council	H. E. Stilgoe, Borough Engineer, Maison Dieu House, Dover.
" 22	Ely—Granite, &c.	Rural District Council	E. R. Ennals, District Surveyor, Lynn Road, Ely.
" 22	Fareham—Materials, &c.	Rural District Council	G. Whitlock, Clerk, Union Offices, West Street, Fareham.
" 22	Gillingham, Kent—Materials	Corporation	F. C. Boucher, Town Clerk, Corporation Offices, Gillingham.
" 22	Darlington—Materials	Corporation	G. Winter, Borough Surveyor, Town Hall, Darlington.
" 22	Wilkesden—Road Making Works	District Council	D. C. Robson, Engineer, Public Offices, Dyne Road, Kilburn, N.W.
" 22	Grange Town, Yorks—Road Works	Eston U.D.C.	C. McDermid, Surv., Council Offices, Grange Town R.S.O., Yorks.
" 22	Lowestoft—Materials	Mutford & Lotheringland R.D.C.	S. G. Bloy, Surveyor, Oulton Broad, Lowestoft.
" 23	Walsall—Materials	Rural District Council	F. W. Mager, District Surveyor, Rushall, near Walsall.
" 23	Bredbury—Materials	Urban District Council	Surveyor, School Brow, Bredbury.
" 23	Strood, Kent—Materials	Rural District Council	J. E. Povey, Clerk, Workhouse, Strood.
" 23	Tenterden, Kent—Materials	Rural District Council	W. R. C. Turner, District Surveyor, Tenterden.
" 24	Aston, Birmingham—Materials	Stores Committee	G. H. Jack, Borough Surveyor, Council House, Aston Manor.
" 24	Chatham—Road Materials, &c.	Corporation	C. Day, Borough Surveyor, Town Hall, Chatham.
" 24	Grantham, Lincs—Granite and Slag	Kesteven County Council	W. B. Purser, 4 St. Peter's Hill, Grantham.
" 28	Little Hulton, Lancs—Materials	Urban District Council	J. H. Heyes, Clerk, Council Offices, Little Hulton.
" 28	Clayton-le-Moors—Materials, &c.	Urban District Council	A. Dodgeon, Surveyor, Clayton-le-Moors.
" 28	Dorking—Roadmaking	Urban District Council	G. S. Matthews, Town Surveyor, Dorking.
" 28	York—Making-up	Corporation	A. Creer, City Surveyor, Guildhall, York.
" 29	West Hartlepool—Streets	Rural District Council	N. F. Dennis, Borough Engineer, West Hartlepool.
" 29	West Malling, Kent—Materials	Urban District Council	J. Marshall, Surveyor, West Malling.
" 31	Normanton, Yorks—Materials	Urban District Council	A. Hartley, Architect, Castleford.
SANITARY:			
Mar. 17	Reading—Stoneware Pipes	Corporation	J. Bowen, Borough Surveyor, Town Hall, Reading.
" 17	Leeds—Earthenware Pipes, &c.	—	City Engineer, Leeds.
" 18	Moss Side, Manchester—Lime Precipitants, &c.	Urban District Council	H. B. Longley, Engineer, Council Offices, Moss Side.
" 19	Tadcaster, Yorks—Sewerage Works	Rural District Council	Martin & Fenwick, Park Place, Leeds.
" 19	Sandwich—Sewer	Town Council	A. T. Firby, Borough Surveyor, Sandwich.
" 19	Hoyle, Cheshire—Scavenging, Pipes, &c.	Urban District Council	T. Foster, Surveyor, District Council Offices, Hoyle.
" 21	Bishop Auckland—Sanitary Pipes	Rural District Council	J. Heslop, Surveyor, Cockton House, Bishop Auckland.
" 22	Darlington—Sanitary Pipes	Corporation	G. Winter, Borough Surveyor, Town Hall, Darlington.
" 22	Todmorden, Lancs—Sewerage Works	Sanitary Committee	Borough Surveyor, Market Ground, Todmorden, Lancs.
" 23	Birkenhead—Sewer	Corporation	C. Brownridge, Borough Surveyor, Town Hall, Birkenhead.
" 23	Walsall—Stoneware Pipes	Rural District Council	F. W. Mager, District Surveyor, Rushall, near Walsall.
" 23	Hanley, Staffs—Drainage Works	—	E. Jones, Albion Street, Hanley.
" 23	Sandiacre, near Nottingham—Scavenging	Rural District Council	J. W. Newbold, Clerk, Becket Street, Derby.
" 24	Aston, Birmingham—Stoneware Pipes	Stores Committee	G. H. Jack, Borough Surveyor, Council House, Aston Manor.
" 26	Walsall—Scavenging	Rural District Council	A. H. Lewis, 29 Leicester Street, Walsall.
" 26	London, W.—Sewer	Paddington Borough Council	E. B. B. Newton, Borough Surveyor, Town Hall, Paddington.
" 28	Little Hulton, Lancs—Stoneware Pipes	Urban District Council	J. H. Heyes, Clerk, Council Offices, Little Hulton.
" 29	Twickenham—Refuse Collection	Urban District Council	H. J. Saunders, Clerk, Town Hall, Twickenham.
" 30	Bawtry, Yorks—Sewerage and Sewage-Disposal Works	Doncaster R.D.C.	D. Balfour & Son, 3 St. Nicholas Buildings, Newcastle-on-Tyne.
" 31	Chailly, Sussex—Sewerage Works	Rural District Council	Powell & Co., Estate Offices, Lewes.
TIMBER:			
Mar. 18	Wimbledon—Timber	Urban District Council	Surveyor, Council Offices, Wimbledon.
" 18	Greenwich—Timber	Borough Council	Borough Surveyor, Town Hall, Greenwich Road, S.E.
" 18	Llanelli—Timber	Navigation Commission	W. Spowart, Clerk, Town Hall, Llanelli.
" 19	Preston, Lancs—Timber	Corporation	Engineer, Ribble Navigation Offices, Preston.
" 19	Dublin—Timber	—	Mountjoy Prison, Dublin.
" 21	Bishop Auckland—Timber	Rural District Council	J. Heslop, Surveyor, Cockton House, Bishop Auckland.

List of Competitions Open.

DATE OF DELIVERY.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	DEPOSIT REQUIRED FOR CONDITIONS, &c.	BY WHOM ADVERTISED.
Mar. 21	Twickenham—Schools	£50, £20, £10.	£2 2s.	H. J. Saunders, Clerk, Town Hall, Twickenham.
" 31	Tipton—Free Library Buildings and Town Hall	£20, £10.	£1 1s.	J. W. Waring, Clerk, Public Offices, Owen Street, Tipton.
" 31	St. Helens—Two Branch Public Libraries	100,000, 75,000 & 50,000 kronen.	—	W. H. Andrew, Town Clerk, Town Hall, St. Helens.
" 31	Vienna—Machinery to Lift Boats on Canal	—	—	Austro-Hungarian Consulate-General, 22 Laurence Pountney Lane, E.C.
April 5	Birmingham—Three Public Libraries	£31 10s., £21, £10 10s.	£1 1s.	A. W. Cross, 23 Valatine Road, King's Heath, near Birmingham.
" 6	Perth—Hospital	—	—	J. Begg, Town Clerk, Perth.
" 8	Malvern—Library	£30, £20, £10.	10s. 6d.	H. L. Whatley, Clerk, Council Offices, Malvern.
" 9	Caine, Wilts—Library	—	—	G. I. Gough, Town Clerk's Office, Caine.
" 23	Llandilo, Wales—Drainage Scheme	—	—	E. Jones, Glancennan, Llandilo.
" 30	Newcastle-upon-Tyne—Grammar School	£100, £50, £5.	£1 1s.	H. J. Criddle, 2 Collingwood Street, Newcastle-upon-Tyne.
May 9	Barnet—Hospital	—	—	C. D. Byfield, 16 High Street, Barnet.

Tenders.

Information from accredited sources should be sent to "The Editor" at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Addressed postcards on which lists of tenders may be stated will be sent post free on application to the Manager, BUILDERS' JOURNAL, 6, Great New Street, Fetter Lane, E.C.4.

Chesterfield.—For construction of septic tank on the Newbold Dunston Urban District Council Sewage Farm, near Chesterfield. Mr. Willis Glossop, surveyor to the Newbold Dunston U.D.C., 20, Cavendish Street, Chesterfield:—

P. Newton, Derby	£476 10 3
R. Holmes & Sons, Chesterfield..	475 0 0
Cope & Raynor, Nottingham ..	434 14 0
J. & J. Holmes, Staveley Town, near Chesterfield	413 19 2
H. Porter, Chesterfield	385 0 0
K. Lee, Alfreton, Chesterfield ..	366 6 0
Maule & Co., Chesterfield	303 0 0
W. W. Bateman,* Chesterfield ..	299 19 9

* Accepted.

Darwen (Lancs).—For the erection of a Sunday school at Lower Darwen, for the United Methodist Free Church. Messrs. Sames & Green, architects, Knott Street, Darwen:—

R. Leigh	£3,414
T. Lightbown	3,200
R. Shorrocks	3,190
J. Knowles,* Darwen	2,750

* Accepted.

Devonport.—For the erection of an entrance-lodge and other buildings at the new cemetery, North Prospect, for the Town Council. Mr. J. F. Burns, borough surveyor:—

Ambrose, Plymouth	£1,793 18 0
Jenkins & Son, Devonport..	1,771 0 0
Partridge, Plymouth	1,056 0 0
S. Roberts, Plymouth	1,055 1 9
A. N. Coles, Plymouth	1,599 0 0
F. J. Stanbury,* Devonport ..	1,572 2 0

* Accepted.

Dutton (near Preston).—For the erection of an isolation hospital, Dutton, near Preston Brook, for the Runcorn Rural District Council. Mr. G. E. Bolshaw, architect, 189, Lord Street, Southport:—

W. Nickson & Sons	£7,510 0 0
S. Appleton	7,145 0 0
J. Tinlin	7,464 0 0
A. White & Sons	7,507 3 2
Beckett & Co.	7,243 10 0
S. Butterworth & Sons, Ltd. ..	6,800 0 0
A. K. Irving & Sons	6,730 0 0
Moore Brothers	6,663 0 0
J. Dolan	6,595 0 0
S. Warburton	6,501 0 0
N. Neill & Sons	6,495 0 0
Hughes & Stirling	6,439 0 0
Dryland & Preston	6,348 2 6
R. Hall	6,222 0 0
H. Fairclough	6,073 0 0
E. Marshall & Sons,* Ltd., Ashton-under-Lyne	5,980 0 0

* Accepted. [Architect's estimate, £6,820.]

Eastbourne.—For the erection of a private dwelling-house, Blackwater Road, Eastbourne, for Mr. Ralph H. Burdett, De Walden Court, Eastbourne. Mr. Bertram Earp, architect, 134, Terminus Road, Eastbourne:—

J. Martin	£2,450 0 0
C. Peers-Dennis & Co.	2,440 0 0
E. Cornwell & Son	2,245 0 0
M. Martin*	1,999 18 10

* Accepted. [All of Eastbourne.]

Eastleigh (Hants).—For the erection of a new Bible Christian church at Eastleigh, for the Trustees:—

R. H. Bunde, Highfield, Southampton ..	£1,950
J. Nichol,* Bitterne Park, Southampton ..	1,772

* Accepted.

Featherstone (Yorkshire).—For the erection of new club and institute, Mr. W. Hamilton Fearnley, architect:—

Milson, Dixon & Son	£2,977 0 0
Walker & Ward	2,564 15 0
M. Mason*	2,492 5 0

* Accepted.

London.—For works at the "Ben Jonson" School, Stepney, for the London School Board. Mr. T. J. Bailey, Board's architect:—

G. S. S. Williams & Son	£1,285 0 0
F. & F. J. Wood	1,201 0 0
G. Barker	1,187 0 0
J. T. Robey	1,183 0 0
J. Haydon & Sons	1,170 0 0
A. J. Sheffield	1,150 0 0
Parrott & Isom	1,133 0 0
Vigor & Co.	1,076 10 0
Stevens Brothers*	996 0 0

* Recommended for acceptance as reduced to £858.

London.—For reconstruction and other works at the South-Eastern Hospital, for the Metropolitan Asylums Board:—

G. E. Wallis & Sons, Maidstone ..	£128,293
A. N. Coles, Plymouth	116,944
C. Dearing & Son, Halliford Street, N...	123,590
A. J. Bateman, Ramsey	121,977
Foster & Dicksee, Rugby and London ..	121,000
Leslie & Co., Ltd., Kensington	120,449
B. E. Nightingale, Albert Embankment ..	118,250
W. Johnson & Co., Ltd., Wandsworth ..	117,406
C. Wall, Ltd., Chelsea, S.W.	117,044
W. Lawrence & Son, Waltham Cross ..	116,5 3
F. G. Minter, Putney	116,500
H. Martin, Northampton	116,2 0
Kirk & Randall, Woolwich	112,970
G. Godson & Sons, Pembroke Works, Kilburn Lane, W.	109,699

[Architect's estimate, £123,500.]

Leicester.—For the extension of machine shop (steel-work only), for Messrs. Taylor & Hubbard, crane makers, Messrs. Tait & Herbert, architects, Leicester and Coventry:—

Whessoe Foundry Co.	£1,439 0 0
Gimson & Co., Ltd.	1,439 6 4
E. Wood, Ltd.	1,100 0 0
Needham & Lowe,* Leicester	1,086 12 0

* Accepted.

London.—For improvements at Wood Street School, Woolwich, for the London School Board. Mr. T. J. Bailey, Board's architect:—

G. E. Wallis & Sons	£4,122 0 0
T. L. Green	4,038 0 0
A. E. Symes	3,961 10 0
Holliday & Greenwood, Ltd.	3,812 0 0
Treasure & Son	3,808 0 0
Thomas & Edge	3,759 0 0
J. Appleby & Sons	3,721 0 0
W. Akers & Co.	3,600 0 0
T. D. Leng	3,584 0 0
Rice & Son	3,548 0 0
J. Garrett & Son	3,519 0 0
E. P. Bulled & Co.	3,469 0 0
Edwards & Medway	3,432 0 0
W. Harris*	3,323 0 0

* Recommended for acceptance.

London N.—For new municipal buildings, for the Edmonton Urban District Council:—

Monk	£58,153
Bateman	55,882
Broad	52,974
Davey	51,557
Lowatt	50,714
Rowley Brothers	50,654
Nightingale	50,307
Whitehead, Ltd.	50,200
Wall, Ltd.	49,995
Goff & Co.	49,952
Miskin	49,780
Minter	49,544
Jerram	49,533
Todd & Warner	49,227
Holliday & Greenwood	49,203
Downs	48,821
Wallace	48,611
McCormick & Son	48,600
Chessum & Sons	48,565
Leslie & Co.	48,472
Godson & Son	47,834
Porter	47,665
Hughes & Stirling	47,737
Knight & Son	47,620
Lawrance & Son	46,974

[Referred to committee.]

London.—For halls and other improvements at Shap Street School, Kingsland Road, for the London School Board. Mr. T. J. Bailey, Board's architect:—

G. S. S. Williams & Son	£12,897
Clarke & Bracey	12,888
McCormick & Sons	12,862
A. Porter	12,850
W. Gregar & Son	12,819
W. M. Dabbs	12,724
L. H. & R. Roberts	12,659
J. Grover & Son	12,650
F. & F. J. Wood	12,581
C. Dearing & Son	12,559
E. Lawrence & Sons	12,459
Treasure & Son	12,201
C. Miskin & Sons	12,079
J. Chessum & Sons*	11,651

* Recommended for acceptance.

Maesteg (Wales).—For the erection of workmen's library, institute, &c., at Caerau, Maesteg, for the Trustees. Messrs. E. W. Burnett & Son, architects, Jarro House, Tondy, and Talbot Street, Maesteg:—

J. Jenkins, Caerau, Maesteg	£2,925
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S. Lewis, Brynmawr Place, Maesteg ..	£2,895
J. Nicholas,* Port Talbot	2,495

* Accepted. [Architect's estimate, £2,650.]

Newbold (near Chesterfield).—For United Methodist Free Church schools, St. John's Road, Newbold Moor, near Chesterfield. Mr. W. Glossop, architect, 20, Cavendish Street, Chesterfield:—

R. Porter, Chesterfield	£2,000
J. Wright, Barlow	1,939
Collis & Sons, Chesterfield	1,985
Lee & Kirk, Alfreton, Chesterfield ..	1,880
J. Stubbins,* Whittington	1,830

* Accepted.

Reigate.—For revolving sprinklers, penstocks, valves, &c., for sewage-disposal work at Earlswood, for the Council:—

J. H. Dale	£2,770 10 0
Whittaker & Co., Ltd.	2,611 6 0
Willcocks & Son	2,576 0 0
F. Bird & Co.	2,514 9 0
W. Weeks & Son, Ltd,* Maidstone ..	2,396 4 0

* Accepted.

Salisbury.—For the erection of new dining-room, classrooms and dormitories at the Hostel, Barnard's Cross, for the Committee of the Salisbury Diocesan Training College. Messrs. John Harding & Son, architects, 58, High Street, Salisbury:—

Harris Brothers	£2,968 15 0
Wort & Way	2,875 0 0
Vincent & Folland*	2,800 0 0
P. Tryhorn & Son	2,795 0 0

* Accepted.

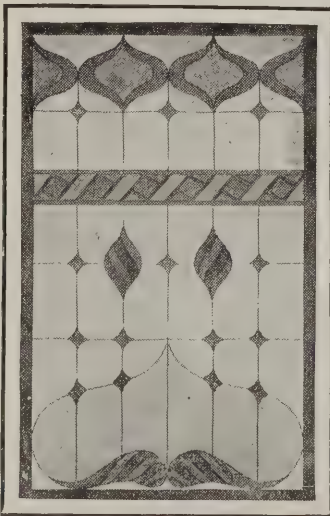
Stratford, E.—For additions and alterations to Bleak House and Magnolia House, Stratford, for Messrs. C. Boardman & Sons. Messrs. George Baines, F.R.I.B.A., and R. Palmer Baines, architects, 5, Clement's Inn, Strand, London, W.C.:—

Mattock Brothers	£1,236
F. J. Coxhead	1,193
F. Gough & Co.	1,184
George J. Hosking	1,127
Charles North	1,087
Sands, Palmer & Co.	1,050
Battley, Sons & Holness,* Clifton Works, 21, Old Kent Road, S.E.	1,047

* Accepted.

The Society of Ordained Surveyors held a meeting at Edinburgh on March 3rd—Mr. A. K. Smith presiding—when Mr. J. L. Wark, advocate, read a paper on "The Law as applied to Mutual Gables." After discussing the origin of the mutual gable, and pointing out the essential difference between it and any other kind of division wall, the lecturer showed that the theory of common property in mutual gables had now been superseded by the view that the rights of the adjoining proprietors were rights of property each in his own half of the gable and of common interest in the rest. He dealt with such questions as the kind of use of a mutual gable which would infer liability to contribute towards its cost, the extent of that liability, and the right of either party interested in a mutual gable to alter or interfere with its structure, and concluded by showing the application of the rules as to mutual gables to the case of proprietors of flats in tenements.

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ARCHITECT AND SURVEYOR'S HEAD ASSISTANT desires change; 12 years' experience. Quantities, specifications, designs, details, perspectives, surveying, &c.—Box 274, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

ARCHITECT and SURVEYOR'S Junior ASSISTANT, age 22; drawings, details, surveying, &c., good references.—Box 246, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

ARCHITECT AND SURVEYOR'S Junior ASSISTANT desires re-engagement. Good at planning, neat draughtsman, quantities, &c., good reference.—STRACHAN, 112, Kelmscott Road, S.W. 283

ARCHITECT & SURVEYOR'S Junior ASSISTANT seeks re-engagement. Experience in planning, details, designs from sketches, perspectives, quantities, levelling and surveying, neat draughtsman; Prob. R.I.B.A.; mod. salary.—Address, W. HELM, Victoria Road, Woolston, Hants. 276

ARCHITECT'S ASSISTANT desires engagement. Tracings, photo copies, and drawing. Evening work accepted.—G. QUINLAN, 19, Forthbridge Road, Clapham Common, S.W. 281

ARCHITECT'S ASSISTANT. Details. Thorough knowledge quantities and fair draughtsman. Five years' experience. Salary 30s.—Address ASSISTANT, Elizabeth Lodge, Crescent Road, South Woodford, Essex. 247

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ARCHITECT'S ASSISTANT, 4 years' article, desires situation as improver; salary no object.—G. S., c/o Thompson, 9, Lochrin Place, Edinburgh. 263

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ARCHITECT'S JUNIOR ASSISTANT desires engagement, 3 years' London experience, well up in office routine; moderate salary.—A. C., 34, Great James Street, W.C. 273

AS SURVEYOR'S ASSISTANT, practical knowledge of building and repairs, good draughtsman, preparation of plans of buildings, roads, sewers, &c. Levelling, supervision.—J. G., 24, Titchborne Street, Edgware Road, W. 264

BUILDER'S ASSISTANT (disengaged), 10 years' experience, prime costs, ledgers, accounts, general supervision and other office routine, excellent references, age 27.—P., 18, Kennington Park Rd., S.E. 242

BUILDER'S CLERK, aged 18½, 4 years experience; office routine and correspondence, can super and cube, and assist in measuring up, wages 28s. 6d.—Box 235, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

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DRAUGHTSMAN AND SURVEYOR (27), varied ex., good designer, working details, spec., take out quantities, experience in shop fitting, good surveyor and leveller, moderate s.—B., Waterworks, Malden, Essex. 241

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GANGER Disengaged, thoroughly understands excavating, concreting, and drain work; good references.—J. A., 90, North Road, Southend-on-Sea. 259

GENERAL FOREMAN disengaged. Town or Country. Thoroughly practical, energetic, reliable, and good manager of men. Just finished large contract. First-class Testimonials.—Address, W.R., Ivy Road, Cricklewood, N.W. 282

GENERAL or Working Foreman disengaged, Carpenter and Joiner by Trade; good manager of men. Good references from late employer.—W. B., 79, St. Albans Avenue, Bedford Park, S.W. 251

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IRONMONGER (Builder's), disengaged, qualified for buying for large builder's office, drawing and photography, excellent refs.—J. T. G., 16, Piershill Place, Edinburgh. 266

JOINERS' FOREMAN and MACHINIST, 15 years with last employer; good references; reasons given for being out; country.—A. G. COOPER, Bridge House, Bocking Church Street, Braintree. 234

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JOINER.—Young, seeks Employment to assist shop foreman. Thorough knowledge of the trade, neat draughtsman, certificated in building construction, good refs.—A. P. H., 12, Waterloo Villa, Harefield, Middlesex. 278

MACHINIST (27), wants job, over and under saw bench, any planers, fourcutter; improver on spindle. Had charge small plant; town or country, 9d.—MACHINIST, 28, Blackhorse Road, Walthamstow. 269

MANAGER OR FOREMAN of Decorators and Painters, seeks Re-engagement. Practical in management, and accustomed to full control. Good artist in Ceiling, Frieze, Scenery, &c., Painting, Writing and Gaining. Successful estimator. Last situation 4½ years, present 5 years. Disengaged any time. Town or country. Reference from present employer. Age 34. State wages and particulars to FOREMAN, 59a, Marlboro' Road, Bowes Park, London, N. 277

P.A.S.I. (25) desires Engagement in Building Surveyor's Office, 3½ years' experience. Well up in construction, sanitary science, surveying and levelling, knowledge of architecture and quantities; neat draughtsman; £1 week; references.—G. L. H., 7, Streatham Place, Streatham Hill, S.W. 272

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PLUMBING, GAS, and Hot Water Work required in town or country; labour and materials. Address, R. C. F. WYATT, Plumber and Sanitary Engineer, Maisonette, 11, Holland Street, Brixton, S.W. 271

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CLERK OF WORKS.—The Chorlton and Manchester Joint Asylum Committee invite applications for the post of Clerk of Works in connection with their Epileptic Colony at Langho near Blackburn; Salary £4 4s. od. per week. Applicants must be thoroughly experienced and the person appointed will be required to reside in the vicinity of the Works. Applications, stating previous experience and accompanied by copies of testimonials of recent date, must be sent to me before the 6th day of April, 1904, endorsed "Clerk of Works."

By order,
HENRY WOODHOUSE,
Chorlton Union Offices, Clerk to the Joint Committee.
All Saints, Manchester.
8th March, 1904.

MACHINIST JOINER wanted by a Lancashire firm of Contractors able to take charge of various Machines and other Machinists. State wages and experience to Box 240, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

STAFFORD UNION.—CLERK OF WORKS WANTED.—The Board invite applications for the appointment of CLERK OF WORKS to superintend the erection of certain New Buildings at the Union Workhouse. The work will last about six months. Applications, stating age, experience and salary required, and enclosing copies of recent testimonials, to be sent to me not later than Thursday, the 24th instant.

WILLIAM MORGAN,
4, Martin Street, Stafford, Clerk to the Guardians.
11th March, 1904.

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BUILDERS' JOURNAL

AND ARCHITECTURAL RECORD.

March 23, 1904. Vol. 19, No. 476.

6, Great New Street, Fetter Lane, E.C.

Summary.

The tomb of Queen Hatshepsu, the builder of the beautiful temple of Dêr el-Bâhari, has been discovered at Thebes. (Page 145.)

In a paper which he read before the Society of Architects last Thursday, Mr. T. G. Marsh said that until an efficient domestic fire fed by gaseous fuel were adopted we should continue to have recurring fogs and a more or less smoky atmosphere. Tests made at Kew and Chelsea by Professor Oliver showed that after a dense fog there was a deposit of carbon and acids exceeding 6 tons to the square mile in the London district. (Page 136.)

Speaking of granite, in a lecture on geology at Sheffield, Mr. A. McWilliam, A.R.S.M., said that as it consisted mainly of two minerals, quartz (hardness proportionately 6) and felspar (hardness 7), whilst the hardness of a best-quality Sheffield pocket-knife blade was $6\frac{1}{2}$, the wearing powers of granite would be readily understood. Pure clay with less than about 2 per cent. of potash and soda was a fireclay; if white, a china clay or a pipeclay; while containing 5 per cent. of oxides of iron and generally a fair amount of potash and soda it became an ordinary red brick clay. (Page 146.)

A hundred years ago the present system of keen competitive tendering under a detailed bill of quantities for the erection of buildings was practically unknown. As to labour, although at that time there were no trade unions the difference of opinion between employers and employed still existed, and the workmen were not slow in making known their own views on the subject. (Page 142.)

In an action which was brought against a firm of architects for alleged negligence in the re-erection of Christ Church, Stoke, the vicar and others were awarded damages amounting to £274, less a counter-claim of £103 for architects' fees. (Page 140.)

Extensive street improvements are to be carried out at Aberdeen, at a cost of £160,000. The chief work will be the widening of the Gallowgate, Broad Street and College Street. (Page 144.)

Cement grout has been extensively used in the great Nile barrage. For consolidating the defective layers of the foundation platform, vertical bore-holes were made through the piers down to the sand or clay and the cement grout then poured in: altogether 774 separate bores were made, of an aggregate length of $7\frac{3}{4}$ miles. The total quantity of cement used was 6,094 barrels (of 360lbs. each) and the cost of the operation was £6,027. It was shown that the pressure exerted at the bottom of the bores, tending to force the cement into interstices in the foundations, varied from 1'76 to 2'4 tons per sq. ft. The walls of the subsidiary weirs below the Delta barrage were made in successive blocks of cement formed in boxes. (Page 139.)

The Facts about the Chicago Fire.

WITH so many exciting incidents crowding on one another in the course of modern life we forget to-day what engaged our closest attention yesterday. Such is the case of the terrible fire that occurred in the Iroquois Theatre at Chicago on December 30th last. At the time, and for a week or so afterwards, endless reports were published from all sources, yet the most important of them all—that of the special Grand Jury appointed to investigate the matter—has been overlooked, presumably because it comes to hand after nearly three months' interval. Yet it is none the less informing, and we therefore wish to give the main facts as stated by the jury. The primary cause of the fire was, as announced long ago, the sparking of an electric arc projector, which set fire to some draperies behind the proscenium arch. The spread of the fire was due to the lack of adequate means at hand to extinguish it. The "kilfyre" (the exact nature of which we do not know, though it would seem to be some form of portable extinguisher) proved quite ineffective; there were no vertical stand-pipes connected with hose on racks at convenient positions on flies and bridges, no automatic sprinklers, and no hooks which could have been used to tear down the burning portion of the scenery. The jury find that the fire spread to the auditorium in consequence of the fire-curtain not operating effectively, "because of delay in attempting to operate same until fire had obtained some headway; it may have been obstructed by some projection or on account of defective operating devices and in consequence of friction against the brick proscenium wall due to expansion of air or gases resulting from burning scenery and stage doors being opened." There was no outlet opened at the top of the stage to permit the escape of smoke, gases and flames, and to secure an upward draught on the stage side of the proscenium wall, the ventilator being closed and the automatic opening skylights which were provided for this purpose being prevented from operating by wire fastenings and props. Exits providing outlets for smoke and gases near the rear of the auditorium at the height above the proscenium arch drew the heated smoke, gases and flames toward the people through the auditorium to these outlets. The gases produced by the fire, being highly heated and thus made much lighter than the cold outer air, were forced upward by the inrush of the air through the stage door, and, finding no opening above the stage, were forced into the auditorium and compelled to find escape at the top of the house, following natural laws, the action being similar to a

large old-fashioned open fireplace with the flue closed, the proscenium arch corresponding to the fireplace opening and the space over the stage to the walls of the flue. The report is signed by the officers of the Builders' Club, the Chicago Architects' Business Association, the Builders' Exchange, the Mason Builders' Association and the Chicago Chapter of the American Institute of Architects. The facts it discloses deserve very careful consideration.

The Law Society's Hall.

THE general character of the designs that emanate from Mr. H. Percy Adams are not such as appeal to the average person. The great red pile of the Belgrave Hospital for Children, for example, is probably regarded as a gaunt ugly structure by the majority of passers-by. We are therefore not surprised to read the "Standard's" opinion of the Law Society's new hall at the bottom end of Chancery Lane, to be opened to-day by their Majesties the King and Queen. Our daily contemporary opines, in well-guarded language, that no one will be particularly struck "perhaps" with the external appearance of the new wing. But we join issue at once. The design is a very strong one and admirably proportioned. The ordinary trimmings that form part of the stock-in-trade of the average architect are conspicuously absent, for which we are thankful, though we fear the general public will dislike the building for this very reason. The fact is, it requires a considerable amount of education to discern good architecture from bad, and it is because the average person has never had such training and is surrounded by buildings so often designated as "handsome" and "beautifully ornamented," that he is unable to appreciate a design like this new hall of the Law Society. We are speaking all this time of the exterior, for the interior is quite a different matter. The old hall, designed by Mr. Vulliamy (who, among other works, was responsible for the fine lamp standards on the Embankment), is now the reading-room; there was thus every need for a new room where the Society's extensive examinations might be conducted. The new hall is 88ft long, 40ft. wide and 23ft. high, panelled in mahogany, with marble columns having bronze capitals, and a Della Robbia frieze over the panelling. The top floor of the new wing is occupied by the kitchen offices, and in regard to these it is worth noting that the heavy dentilled cornice below the range of windows must have looked very different on paper—it would then have given a finish to the flat over the hall which is now wanting, as the kitchen storey is considerably recessed.



MERVYN MACARTNEY.

AN ARCHITECT'S COTTAGE.

THE cottage on Silchester Common, of which some views are here given, was designed by Mr. Mervyn Macartney and erected on the site of a burnt-down cottage about ten years ago. The upper storey is of weather-boarding tarred. Mr. Macartney has spent a good deal of spare time in planning and making the garden, a charming peep of which is afforded by the photograph reproduced on the opposite page. The drawing-room is panelled in oak about 7ft. high, "otherwise," says Mr. Macartney, "there is nothing of interest in the building": but we are sure our readers will think differently of such a delightful little house.

CANTERBURY CATHEDRAL.

PROF. ELSEY SMITH delivered a lecture on Canterbury Cathedral at the Carpenters' Hall last Thursday. He said that the building had sufficient peculiarities of plan and structure to make it a very interesting object to the student of architecture. In proposing a vote of thanks to the lecturer, the Dean of Canterbury said they had been informed by the architect, Mr. W. D. Caröe, that the great central tower, known as "Bell Harry Tower," one of the noblest features of the cathedral, was in urgent need of repairs. The tower had been carefully examined lately, and he was happy to say that there were no fissures or cracks in the main walls of the structure; but there were cracks in the flanking angle buttresses of the turrets which were in serious need of repair. The whole of the external ornamentation had been very much damaged by weather. On the south face one of the heavy mullions of the upper window had become dislocated. To arrest the decay and to maintain the tower an expenditure of some thousands of pounds would be imperative at an early date. The Ecclesiastical Commissioners had just granted the Dean and Chapter a sum of £1,000 in order to erect a complete scaffolding around the tower, so that the architect might make a thorough investigation into its structural condition and prepare a definite estimate of the cost of

repairs. The Cathedral was a worthy representation of English architecture and of English Christianity.

DOMESTIC FIRES AND THE SMOKE NUISANCE.

A PAPER on this subject was read before the Society of Architects last Thursday by Mr. T. G. Marsh. After observing how the sulphur dioxide sent from our chimneys oxidized to sulphuric acid, ate away our stone and brick buildings, defaced our monuments and killed our vegetation, he mentioned the tests made at Kew and Chelsea by Professor Oliver, which showed that after a dense fog there was a deposit of carbon and acids exceeding 6 tons to the square mile in the London district. The daily canopy of smoke overshadowing the metropolis was estimated some years ago by Prof. C. Roberts, F.R.S., at 50 tons of solid carbon and 250 tons of carbonic oxide gases, acids and hydro-carbons.

In this country the old-fashioned open fire-grates, cheerful in appearance but wasting a large percentage of the fuel, were almost exclusively in use. Various attempts had been made to improve these fires, but almost without exception had been failures, for the reason that in a domestic house the servant, unlike the stoker in a mill, had no care in her methods of handling the fuel: it was thrown on the fire with little or no judgment, so that we had vast volumes of smoke, and until there was adopted an efficient domestic fire fed by gaseous fuel we should continue to have our recurring fogs and our more or less smoky atmosphere. Mr. Marsh said he was of opinion that the principal reason why gaseous fuel had not been adopted more



ENTRANCE HALL, [SILCHESTER.]



COTTAGE AT SILCHESTER. MERVYN MACARTNEY, ARCHITECT.

generally for heating purposes was that the price had been considered prohibitive, in many cases the various savings attendant upon its adoption not having been fully taken into account. Gas should be sold at a very considerable reduction in price when intended for purposes other than lighting.

It might be taken that a gas cooking-stove using gas at 3s. per 1,000 cub. ft. and a

kitchen range with coal at 16s. per ton were about equal as to cost. It was however very different with gas fires. For these the price of gas should be fully 20 per cent. less than in the case of cookers, otherwise the cost was much too high to allow of their general adoption.

The capital expenditure required for supplying lighting gas was about five times

that required for the supply of gas for heat and power, as in one case the greater portion of the annual sale was during four months of the year, and only during a few hours per day during these months; whereas gas sold for the other purposes might be said to be equally distributed over the whole year, and was burned on an average nine hours per day throughout the year (Sundays excepted).



HERBACEOUS BORDER, SILCHESTER.



LINCLUDEN ABBEY, DUMFRIES.

LINCLUDEN.

By H. D. SIMPSON.

AMONG the many ecclesiastical buildings in the south-west of Scotland, Lincluden ranks high in interest. Founded as an abbey about the year 1164 by Uchtred, who with his brother Gilbert ruled over Galloway, it was occupied at first by a sisterhood of Black Nuns of the order of St. Benedict, at that period almost the leading religious community in Scotland. Of the original building the little that remains shows the style to have been transitional between Norman and Early English. Small in size, it comprised a nave, choir and north aisle. If a south aisle was built there is now no trace.

The stirring times that saw the founding of the abbey and the troubled state of Galloway may well be judged by the founder's death at his brother's hands. Gilbert, who committed the deed, was, at his death, succeeded by Uchtred's son, Alan—one of whose daughters, Devorgilla, became an important personage in the history of the district. Famed for her piety, she erected many religious houses, notably Sweetheart Abbey and the fine bridge over the Nith at Dumfries. Balliol College at Oxford, another of her benefactions, was named after her husband, John Balliol; while to her son was awarded the crown of Scotland by Edward I. of England, acting as adjudicator.

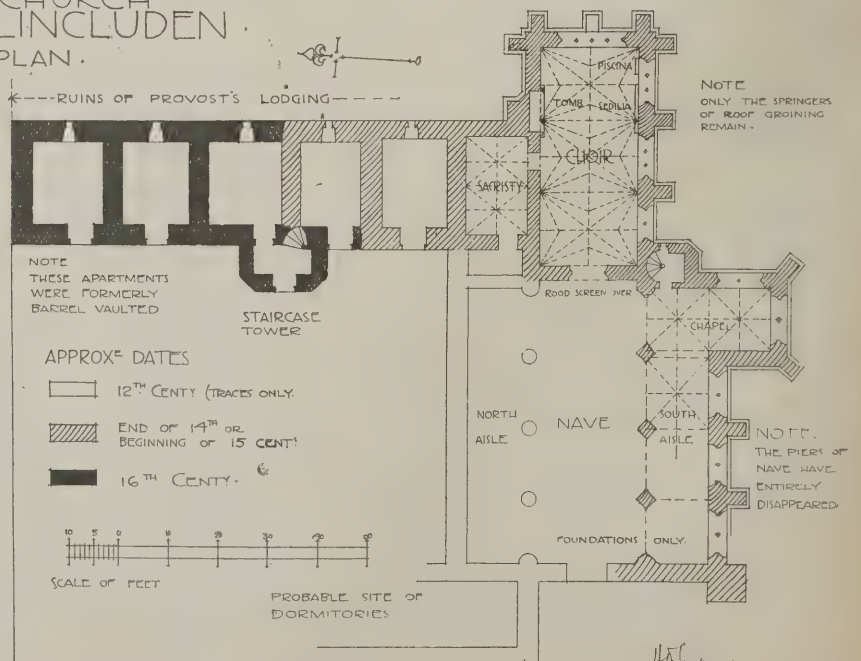
David II. gave lands in Nithsdale to Archibald (the Grim) Douglas, who, on the doubtful pretext of irregularities by the nuns, seized Lincluden, and after the enforced departure of the inmates the institution ceased to exist. A reaction followed the cupidity of Lord Douglas, and, perhaps to make amends, he erected a new church and thus formed what proved the nucleus of the collegiate buildings of Lincluden. Of the new structures the whole style of the buildings gives evidence of the pride which Lord Douglas had of the illustrious family over which he ruled; the heraldry, which forms an important decorative detail, especially so. To the older buildings were added, in graceful fourteenth-century work, a chancel or choir, south aisle, south transept and a sacristy. The choir is small, 44ft. by 19ft. 6in., but the large scale in which the carved decoration is designed tends to give an impression which goes far to balance the want of spaciousness. Between

nave and choir is an arched rood screen in stonework; on the south wall are three windows once filled with mullions and tracery, a canopied stone sedilia and a piscina with florid niched opening. Below the east window can still be seen the corbels on which the altar rested. The north wall of the choir is especially interesting. Here is situated the tomb of Princess Margaret, daughter of Robert III. and wife of Archibald Tyneman (tined or lost battles), Earl of Douglas, first Duke of Touraine, and son of Archibald the Grim. The tomb (see centre plate) is about 8ft. square. Above an elaborately-sculptured base, forming the sarcophagus, a boldly curved and deeply-recessed arch forms a canopy for the effigy.

Above again is a florid carved cornice with finial above the arch hood. In the base are nine cusped panels with shields enriched with the arms of the house of Douglas and their relations: among them one showing

a heart as the escutcheon of the Douglasses when near the height of their power recalls a sad proud passage in their history, that of the good Lord James bearing the heart of Bruce to Palestine, and who on his way was slain in battle against the Moors. In a triangular panel above the arch a heart is shown again, but surrounded by three cups, the insignia of Lord Douglas's office of cup-bearer to the king. Regarding the question as to whether the tomb was built with the choir and remained empty for some time, nearly all the evidence tends to show that it comprised part of the original design. The matter is thoroughly discussed in M'Dowall's "Chronicles of Lincluden." The inscription is cut in the back wall of the tomb, in the ordinary dark red sandstone of which the college is built. The doorway to the sacristy is situated next the tomb and is richly decorated with carving and shields. The arms of the founder and his relatives form the chief features of the ornamentation of the choir, in all cases these being finely designed and cut. The roof was richly groined, but only the springers, wall shafts and corbels remain. At least one boss, however, can still be seen among the many fragments remaining on the site, and from it and the deeply undercut mouldings of the ribs an idea may be gained of the splendid appearance the roof would have when entire. Of the provost's lodging, of sixteenth-century date, only a few parts remain. Above the apartments of the ground floor would probably be situated the great hall and other rooms common to such establishments. The inmates of the collegiate church were secular priests, i.e. men in holy orders but not monks. At first there were twelve canons and a ruler called prepositus or provost, and on this account the foundation itself was often termed a provostry. Afterwards the numbers were enlarged to eight prebendaries, twenty four beadsmen and a chaplain. A village, peopled by dependants and retainers of the abbey or college, was evidently situated near the main buildings to the south and nearer the town of Dumfries. The Reformation, which proved so disastrous to nearly all monastic establishments, affected Lincluden in its sweeping movement, and though the place held out for some time it eventually bowed to the inevitable, and its history as a centre of activity came to an end.

THE COLLEGIATE CHURCH OF LINCLUDEN. PLAN.

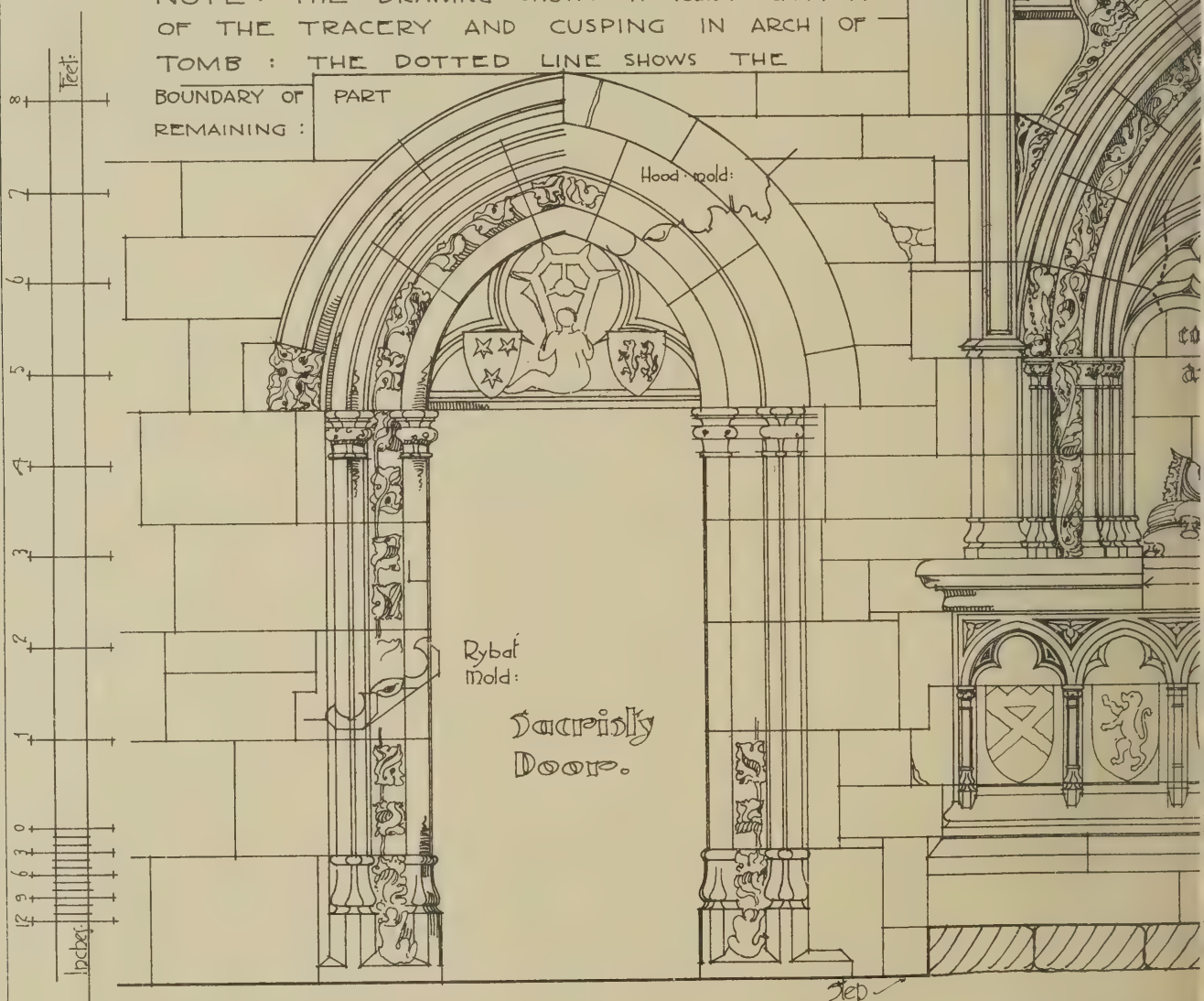


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THE COLLEGIATE CHURCH OF LINCLUDEN

SACRISTY DOOR AND
TOMB OF PRINCESS MARGARET:
DAUGHTER OF ROBERT III:
NORTH WALL OF CHOIR:

NOTE: THE DRAWING SHOWS A RESTORATION
OF THE TRACERY AND CUSPING IN ARCH OF
TOMB: THE DOTTED LINE SHOWS THE
BOUNDARY OF PART
REMAINING:

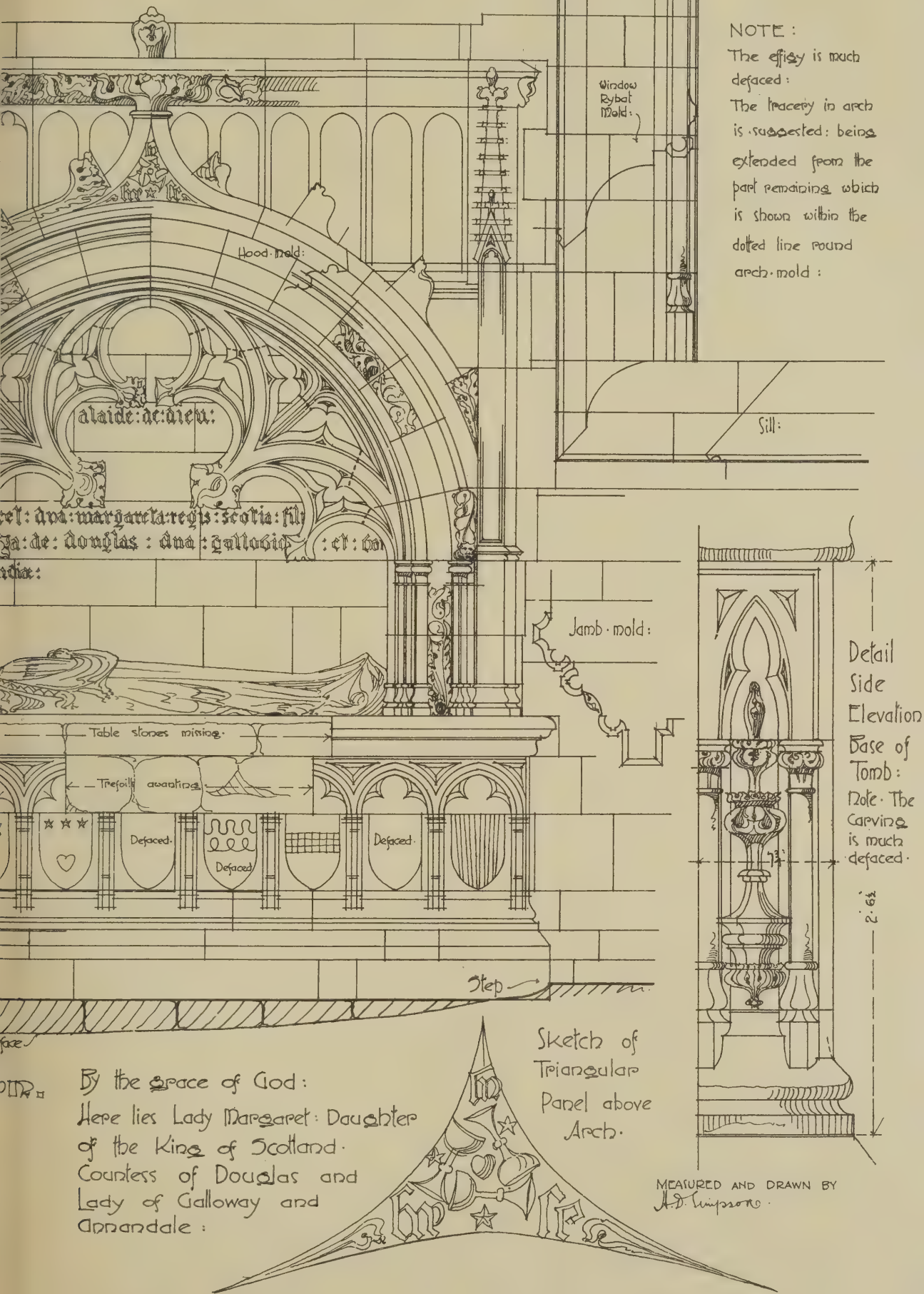


Inscription. *alaide: de: dien:*

Translation

*Hic: iacet: ana: margareta: regis: rober: filia: quoda
comitella: de: douglas: ana: galivdie: et: vallis:
anandie:*

NOTE. The tomb had formerly a
wrought-iron grille across the archway.



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NILE BARRAGE.

The Use of Cement Grout.

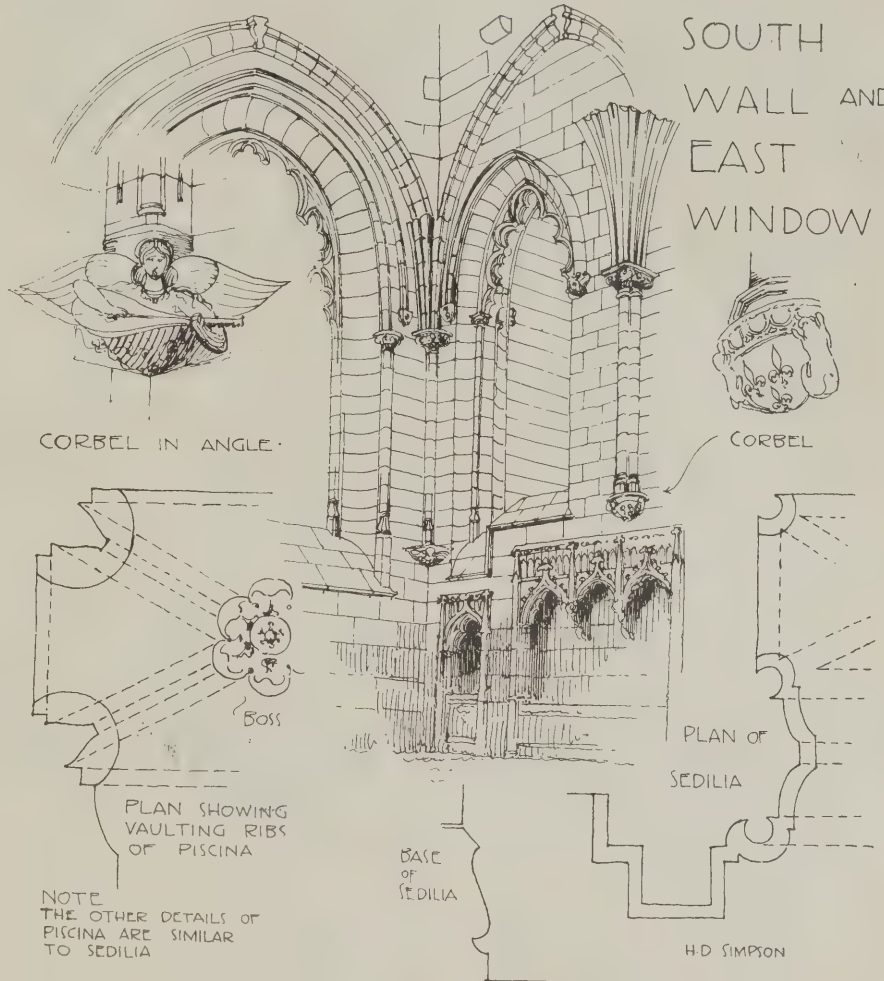
At the meeting of the Institution of Civil Engineers held on March 15th Major Sir R. Hanbury Brown, K.C.M.G., late R.E., M.I.C.E., read a paper on "The use of Cement Grout at the Delta Barrage in Egypt."

After referring to the successful restoration work carried out by Colonel Western to render the barrage efficient, the author described the method of rendering the work still more secure by the use of cement grout for consolidating the defective lower layers of the foundation platform. Vertical bore-holes were made along the centre lines of the brick masonry piers, and carried down into the sand or clay underlying the barrage foundations. When a bore-hole had been successfully cleared to at least 1 metre below foundation level, cement grout was mixed and poured down the bore continuously until the grout rose in the bore flush with the top. Altogether 774 separate bores were made, of an aggregate length of $7\frac{3}{4}$ miles. The total quantity of cement used was 6,094 barrels (of 360lbs. each). The total cost of the operation was £6,027. It was shown that the pressure exerted at the bottom of the bores, tending to force the cement into interstices in the foundations, was in the case of most of the bores 2½ tons per sq. ft. and in the case of the remainder 1½ tons per sq. ft.

The paper then dealt with the construction of the subsidiary weirs below the Delta barrage. The bed of the river was first dredged out to the form of the weir foundation-line. The core and footing walls were then made by the employment of cement grout, the core-wall in 20ft. of water and the footing-wall in roft. The walls were made in successive blocks, but as continuous masonry without break, by forming boxes, carefully put together, along the wall alignment, the first box formed being a four sided one and all subsequent boxes being three-sided, the last formed block of masonry closing the fourth side. The box having been put together and lined with sacking to make it cement-grout tight, and having also been rigidly tied in position, was then filled with rubble of all sizes, after arranging perforated iron pipes along the axis of the box. When the box was full of stone to water-level, the cement grout was poured down the pipes in inner unperforated tubes, until the contained water had been displaced by the cement grout. The box and its contents were then left alone till the next morning, when, the cement having set, the box was taken to pieces, moved forward, and put together again to form the next block in the same way.

To put the boxes together, floating gantries on big barges were used in the case of the core-wall and a specially designed apparatus on pontoons in the case of the footing-wall. Divers were employed to assist in putting together boxes to ensure that all the parts were correctly fitted together.

The cement and water were mixed into mortar by unskilled labour, and the author pointed out that one of the advantages of the method adopted for forming the subaqueous walls was that no skilled labour, other than two divers to each box, was required. The filling of the boxes with stone and the mixing and pouring of the grout were performed by the cheapest labour obtainable; the putting together of the boxes only required care. Each core-block contained 165 cub. metres of grouted masonry and took three to four days to make. Seven lifts with their gantries were the largest number at work at a time, and these turned out an average of 350 cub. metres of grouted masonry per diem. The author claimed that no other system could such rapid progress

THE COLLEGIATE CHURCH
OF LINCLUDENPART OF
SOUTH
WALL AND
EAST
WINDOW

have been made or such excellent subaqueous masonry have been obtained.

The paper then described the manner of putting in the foundations of the two locks associated with the weirs, by the same method of forming masonry of cement grout under water without any pumping. The lock area was enclosed by lateral walls made as the weir core-walls were made. The ends were closed by making a thin temporary wall in a similar manner, but by a special arrangement both these end walls and the lateral walls were carried a little above water-level. Grouting pipes were next arranged vertically at about 10ft. intervals all over the enclosed area, and a layer of rubble 7ft. thick was thrown in around the pipes to form the bottom layer of the floor. A platform was formed over the lock site between the enclosing walls, the upright pipes being used as the vertical supports. The cement grout was then poured down the pipes, commencing from one end of the lock, and the pouring continued until a float in an unoccupied pipe showed that the cement grout had risen 7ft. from the bed. When this 7ft. layer had set, the end walls were formed upon it by grouting, and the whole left for two or three days to set. The enclosed water was then pumped out in a few hours, and the lock was built on the grouted floor in the dry, all springs having been effectually excluded. The operation was perfectly successful in the case of both locks. The author claimed for this method that a perfectly sound floor was obtained, as no troublesome springs created defects by forming a way under or through the masonry

while under construction. The quantity of cement used was at the rate of 3.67 barrels of cement (of 360lbs.) per cub. metre, or 40 per cent. The weirs and their locks were constructed in a little over three seasons, each season being of eight months' duration. The total cost was £E. 434,000.

The Asyût Barrage.

At the same meeting a paper on the barrage across the Nile at Asyût was read by Mr. G. H. Stephens, C.M.G., M.I.C.E. This barrage was begun in 1898 and finished in 1902, at a cost, including subsidiary works, of £869,546: it ensures a constant supply of water to Middle Egypt and the Fayûm.

The total number of men employed during the busiest part of a season averaged about 7,500, though at exceptional times as many as 12,500 were at work.

The river-bed at Asyût is composed of fine sand, and when any part of it is exposed by pumping the surface uncovered is alive with innumerable springs. As this kind of bed extends to a great depth, a comparatively shallow foundation of great width was considered the most suitable for such a place. As originally designed, the foundations consisted of a masonry platform or floor 26½ metres (87ft.) wide, with shallow brick wells through the floor and for a short distance beneath it under the sites of piers and abutments. The original design also included the sinking of a line of rectangular curtain wells beneath both the up- and down-stream faces of the floor to prevent water from passing underneath. The consulting engineer, Sir Benjamin Baker, modified this design by

increasing the thickness of the masonry-floor foundation and dispensing with the shallow wells under the bearing surfaces of the super-structure. The rectangular curtain-wells were also discarded, owing to the difficulty of being able to make water-tight junctions between them, and cast-iron sheet piles, sunk to a greater depth, were substituted for them. The iron piles were made with tongued-and-grooved ends, the tongue being slightly shorter than the groove to allow the joints to be filled with cement grout and thus made watertight. The bottom of this platform or floor is about 12 metres (39ft. 4in.) below the ordinary high-river level. The

Law Cases.

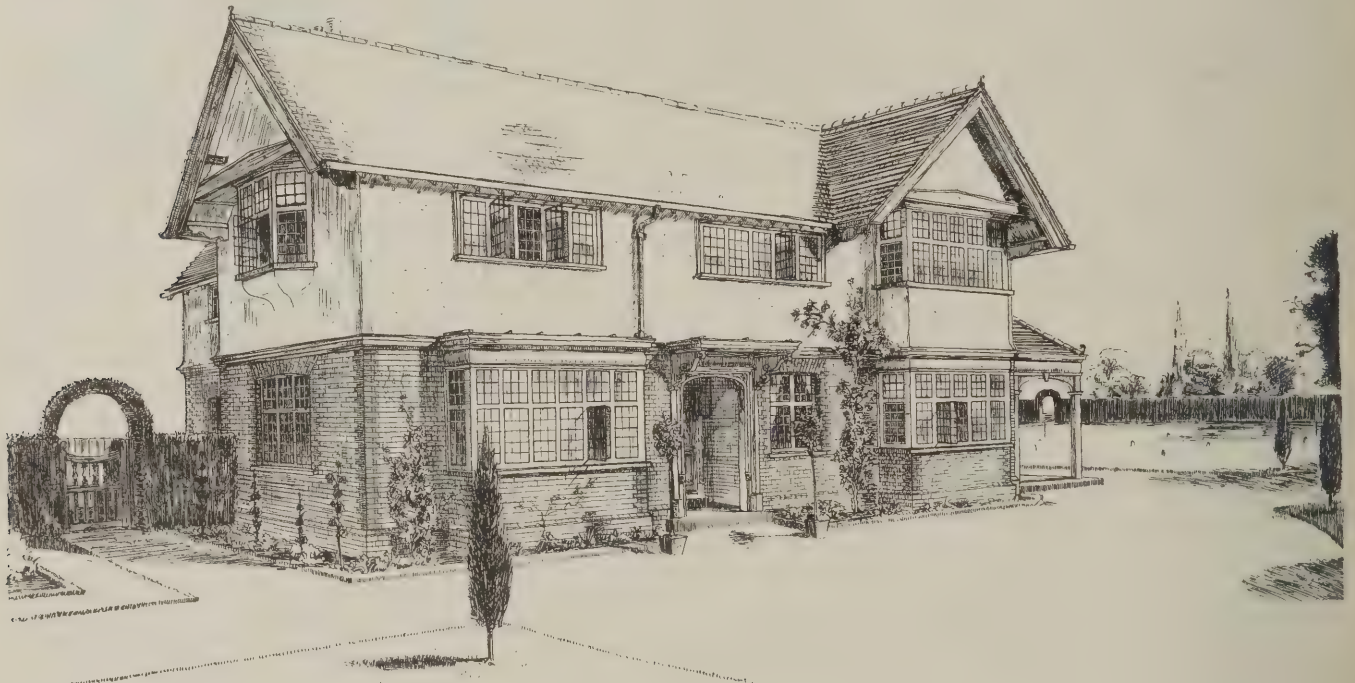
Rebuilding a Church: Action against Architects for Negligence.—At the recent Staffordshire Assizes the Rev. John R. Line and others brought an action against Messrs. Lynam, Beckett & Lynam, architects, of Stoke (which was heard in the Nisi Prius Court before Mr. Justice Ridley and a special jury), to recover £300 damages for alleged negligence in the re-erection of the nave, roof and aisles of Christ Church, Stoke. The allegation was that owing to the negligence of the architects the builder

Bricks and Mortar.

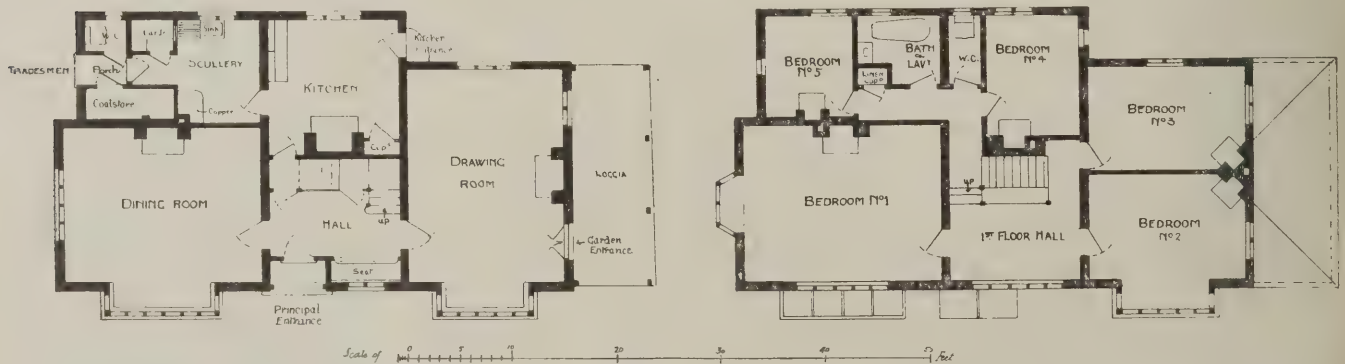
Aphorism for the Week.

Whatever beauty there may be in a Roman ruin is the remnant of what was beautiful originally; whereas an English ruin is more beautiful often in its decay than even it was in its primal strength.—NATHANIEL HAWTHORNE.

Our Plates. MR. MORLEY'S drawings of Siena are referred to on p. 141 of this issue.—An article on the collegiate church of Lincluden, in which particulars of the sacristy door and the tomb of Princess Margaret are given, will be found on p. 138.



HOUSE AT WATFORD. HENRY JAMES WISE, A.R.I.B.A., ARCHITECT.



bed of the river for a distance of 20 metres (65ft. 7in.) from the masonry floor on both the up- and down-stream sides of the barrage is thickly paved with rubble pitching.

The work was carried out by the Egyptian Government, who appointed Sir Benjamin Baker the consulting engineer, Messrs. Aird & Co. being the contractors.

Royal Academy Exhibition, 1904.

THE sending-in day for architectural works at this year's Royal Academy Exhibition is next Friday, March 25th. As in previous years, we shall be pleased to deliver any works free of charge provided they are sent to our offices, 6, Great New Street, Fetter Lane, not later than 2 p.m. on the above date, and we are allowed to make reproductions of such as we wish. We particularly request that frames be sent as soon as possible.

did not do his work properly, to such an extent that rain fell from the roof and draughts were very common. The defendants were written to, but nothing was done to remedy the matter. At length the church authorities had to call in other architects, and it was found that the slates were not of the quality specified, nor the tiles, and the boards of the the roof were not properly seasoned and had shrunk. Another builder was also called in, and the plaintiffs sued for the amount they had to pay him to put the church in proper condition. The defence was that there was a necessity of keeping down expenditure, that suitable materials were put in for the money available, and that adequate supervision had been given.—The jury found a verdict for plaintiffs and assessed damages at £274, less the counter-claim of £103 for architects' fees.

House at Watford.

THE house illustrated on this page is in Hagden Lane, Watford, the site being an awkward though picturesque one. The ground floor is of red bricks with rubbers for quoins, and a moulded wood string at first-floor level flashed with lead and dressed under the pebble rough-cast above. The roofs are tiled over boarding and tarred felt, the chimneys being rough-cast with battered faces (they occur on the ridges of gables on the opposite side of the house to that seen in the illustration). The wood-work will probably be painted a cream white. The architect is Mr. Henry James Wise, A.R.I.B.A., of London, and the builder Mr. Watkins, of Watford. Casements are being supplied by Messrs. R. E. Pearse & Co., of London, and an electric-light installation by Messrs. Groves & Co., also of London.

DRAWINGS OF ARCHITECTURE.

WE confess somewhat of an ignorance of Mr. H. Morley as an architectural draughtsman, but the drawings we reproduce are well worthy of being included in our series. They formed part of the set which gained for Mr. Morley the medal of merit in the Owen Jones competition this year.

The originals are of course coloured, and the colour is put on with considerable richness of effect. The drawing of the old cloisters of Perugia Cathedral is especially good. Of the other two reproduced in our centre plates, that of the interior of Siena Cathedral is the better: it is a very effective drawing and the treatment of the caps to the piers, and other details, may be noted as exhibiting considerable ability, though we feel that the screen has been put in rather hastily.

Views and Reviews.

Veneering and Inlay Work.

This is a very cheap and handy little book on the subject of veneering and inlaying. Primarily it furnishes practical details of how the various kinds of work are executed, with illustrations of tools and patterns; the author, however, has included just sufficient matter relating to the history of the art, and he has done so in a very readable manner, as in the introductory chapter, where he observes that veneering is only bad when it is done with an intention to deceive and only good when it shows that it is veneer, "as in such fine examples as those of the seventeenth- and eighteenth-century workmen, which are as good to-day as ever they were. Chairs, cabinets, chests of drawers, of the days of Queen Anne—to go no further—are in use to-day, all with some veneering upon them, and Chippendale, Heppelwhite and Sheraton were noted, especially the latter (last), for their decorative veneered work." The book is No. 3 of the "Woodworker" series. It should find a ready sale.

"Veneering, Marquetry and Inlay," by Percy A. Wells. London: Percival Marshall & Co., 26-29, Poppins Court, Fleet Street, price 6d. nett.

Building Construction.

Professor Gourlay has succeeded in breaking new ground in the subject of building construction. He has taken a particular building and illustrated it in all its stages and all its parts with very clear drawings, many reproduced in colour. The accompanying letterpress practically only explains the illustrations, giving reasons for the construction adopted, and is admirably lucid and to the point. We highly commend this book. It is far more practical than most works on construction. Though primarily intended by the author for Scottish students, and though the building chosen for illustration and explanation is a substantial tenement, which is the most common type of building throughout Scotland, we can recommend the book to all students.

"Elementary Building Construction and Drawing for Scottish Students," by Charles Gourlay, A.R.I.B.A., B.Sc., Professor of Architecture and Building Construction in the Glasgow and West of Scotland Technical College. London, Glasgow and Dublin: Blackie & Son, Ltd. Bound in cloth: 6s. nett. Plates alone: 3s. 6d. nett.

The House-Owner's Manual.

Mr. T. M. Clark, the author of the well-known work "Building Superintendence," has now turned his attention from teaching architects their business to instructing the simple householder in taking economical and efficient care of his domicile. We are very much afraid that the householder of this country, whatever his brother in the United States may do, will not generally study this book, though it would be to his inestimable advantage if he did. We are inclined to think he will still call in the hedge carpenter

and the wily plumber to work their nefarious designs whenever the slightest little thing goes wrong, while he continues his happy inconsiderate way of causing trouble to himself and annoyance to his neighbours. The hints throughout this volume, though they necessarily have an American accent, are very many and most useful, and the book should be of considerable service to architect and builder as well as to the reader it is intended for. Mr. Clark writes clearly. After describing how a house is built he takes us entertainingly first on to the roof, then around chimneys, fireplaces, stoves and furnaces, and then to the heating appliances,

industrial purposes, and to meet the difficulty of those who, engaged in business during the day, have little time to study, and are unwilling to devote several years to a systematic course of chemistry before commencing the subject in which they are essentially interested. We have often urged the necessity of such abbreviated and specialized instruction for technical students. The book contains much information very concisely and clearly put, but we are inclined to think it is still a little too elaborate for the elementary student: it would have been possible to give him all the facts in shorter compass. Descriptions of experiments are



DRAWINGS OF ARCHITECTURE: OLD CLOISTERS OF PERUGIA CATHEDRAL, BY H. MORLEY.

plumbing and all its troubles, the gas and electrical fittings, and finally admonishes us on the care of woodwork and keeping a house in repair.

"The Care of a House: A volume of suggestions to householders, housekeepers, landlords, tenants, trustees and others, for the economical and efficient care of dwelling-houses," by T. M. Clark. London: Macmillan & Co., Ltd., price 6s. 6d. nett.

Metallurgical Chemistry.

This is a very able little book for elementary students of chemistry as applied to metallurgy. It is intended for the use of technical students who are desirous of making a study of the metals employed for

well enough for the teacher or the student who works through each himself, but where the former performs the experiments before the class the student does not need the matter and where he experiments himself he will generally get on better with more personal instruction. To the reader desirous of quickly grasping the essentials of a subject, descriptions of experiments are wearisome and those in this book would be better curtailed or published as addenda, say in a key volume or at the end of the book.

"Introduction to Metallurgical Chemistry for Technical Students," by J. H. Stansbie, B.Sc., E.I.C. Bristol: John Wright & Co. London: Simpkin, Marshall, Hamilton, Kent & Co., Ltd., price 4s. 6d. nett.

A CENTURY OF BUILDING PRICES.—II.

By T. E. COLEMAN, F.S.I.

(Continued from p. 119, No. 474.)

ON the appearance of the first portion of this article a correspondent very kindly forwarded an interesting old price-book entitled "A list of prices for materials and labour, and labour only, adapted to the practical house carpenter, by William Pain, corrected to 1805." A few of the principal prices quoted therein are here given for purposes of comparison.

Pain's Prices for 1805.

EXCAVATOR'S WORK.

For digging foundations, cellars, &c., according to the quality of the ground, exclusive of carting away, at per yd. - - from 6d. to 1s.

BRICKLAYER'S WORK.

New brickwork laid dry in cess-pools, wells, &c., with good hard-burnt bricks - at per rod 12 15 0
New brickwork in buildings, party-walls, &c. - ditto 12 4 0
Ditto half place bricks, half grey stocks - ditto 13 5 0
Ditto all grey stocks - ditto 14 9 0
New fronts, faced with best malm stocks, inside grey stocks ditto 16 0 0
Labour and mortar for the above work - per rod £3 8s. od. to 3 15 0

Typical examples are also given for computing the cost of brickwork at per rod in any part of England, according to the local cost of materials. In one example the bricklayer and labourer are supposed to perform one rod of brickwork in five days, whilst in another the work is assumed to take six days per rod. The latter analysis of cost is here given:—

BRICKWORK (per rod). £ s. d.

6 days bricklayer at 4s. 6d. per day 1 7 0
6 days labourer at 3s. 3d. per day - 0 19 6
4,500 bricks to a rod at 47s. 6d. per M. - - - 10 13 9
32 bushels of lime at 8d. per bushel 1 1 4
2½ load of sand at 3s. per load - 0 7 6

14 9 1

In this example it will be noticed that the prices for each item of the analysis are assumed to include the trade profit, use of scaffolding, plant, &c., as no other allowance is made for these charges. The total cost thus obtained is practically the same as the rate previously quoted for grey stock brickwork in mortar. Compared with the prices current in 1776, the cost of brickwork generally shows a considerable increase.

Arches.

Labour to common skew-back arches - - per ft. super. rod. to 11d.
Straight or circular arches, s. d.
faces set in putty, per ft. super. from 2s. 3d. to 2 6

"Note.—All gauged work is measured and paid for as common brickwork; those at so much per ft. super. for rubbed and gauged as above."

Pointing. s. d.

Pointing down new fronts, tuck and pat work, labour only per ft. super. 0 5
Ditto in old work, including scaffolding and mending - ditto 0 6
If coloured, add - - ditto 0 1

Brick-nogging.

Grey stocks, laid flat per yd. super. 2 8
Ditto on edge - - ditto 1 10
"The quarters to be measured in."
Labour only to nogging per yd. super. 4d. to 6d.

Brick Paving.

Grey stocks laid flat in mortar per yd. super. 2s. 2d. to 2s. 4d.
Ditto ditto on edge ditto 3s. od. to 3s. 2d.

Pantiling.

New pantiling laid dry, with hips and ridges laid in mortar per square 31 0
Ditto, bedded, and pointed outside with lime and hair - ditto 34 0

Plain tiling.

Plain tiling, all new tiles, and lathed with double heart laths - 52 0

SLATER'S WORK.

Slating with Westmoreland green slating on boards - per square 63 0

MASON'S WORK.

Portland stone, scalped per ft. cube 4 6
Plain work to ditto per ft. super. 1 0
Plain sunk work - - ditto 1 2
Moulded work - - ditto 1 4
Slit Ryegate stone hearths and covings - - - 1 1

CARPENTER'S WORK.

Fir in bond timber and lintels per ft. cube 2 3
Oak in bond and lintels - ditto 6 0

The price of 2s. 3d. per ft. cube for fir appears to be extremely low considering that at this date a tax was levied on all imported timber. The lowness of this price seems more pronounced from the fact that on referring to a calculating table which is given in the price-book for ascertaining the cost of fir per ft. cube from prime-cost values no cheaper rate than £4 19s. 6d. per load is provided for, whilst the highest prime-cost rate mentioned is £7 per load. According to these values, the cost of fir in bond and plates is given as 3s. 2½d. per ft. cube for fir timber purchased at £4 19s. 6d., and 4s. 2d. per ft. cube for fir at £7 per load.

Bracketing.

Cove bracketing - per ft. super. 10d.

Centering.

Common centering. Per square from 12s. to 16s.
Centering to doors and windows not exceeding 5in. wide per ft. run 3d.

Rough boardings, &c.

1in. yellow deal rough boarding under slating per square 40 3 0
1in. sound boarding with double fillets - ditto 42 4 6
1in. battening to walls, labour, nails and plugs - ditto 12 3 3

Floors.

1in. white deal, rough, edges short - - per square 36 4 0
1in. ditto planed and folded floor - - ditto 46 5 6
1in. yellow deal, rough - ditto 42 4 6
1in. ditto planed and folded floor - - ditto 52 -

Inch deal.

Rough - - per ft. super. 5½d.
Ditto planed one side, ploughed and tongued - - ditto 7½d.
Ditto planed on both sides - ditto 7½d.

Sash frames.

Deal sash frame for 1½in sashes with oak sunk sills, prepared to hang single per ft. super. 0 7 3
Ditto to hang double - ditto 0 8 3

Sashes, &c.

1½in. deal ovolo sashes and fixed - - per ft. super. 0 7 2½
Ditto prepared to hang or slide - - ditto 0 8 -
2in. ditto - - ditto 0 9 -

Sashes—cont.

Deal sash frames with wain-scot pulley stiles and bead, 1½in. wainscot ovolo sash, hung with leaden weights and lines complete - ditto 1 10 -

Doors.

1in. deal rough doors, ledged per ft. super. 0 7 2½
Ditto planed on two sides ditto 0 9 3
1½in. four pannel square ditto 0 11½ 3½
2in. four pannel, bead flush and square - ditto 1 3½ 4

PLASTERER'S WORK.

Walls.

Rendering one coat rough per yd. super. 3½d.
Ditto and set - ditto 6d.

Ceilings and partitions.

Lime and hair mortar on lathing - per yd. super. 1s. 2d.
Floated lath and plaster, set ditto 1s. 7d.
Ditto with strong fir lath and fourpenny nails, washed for painters - ditto 1s. 9d.

Cornices.

Plain plaster cornices per ft. super. 9d.

PAINTER'S WORK.

Plain painting.

Painting once in oil per yd. super. 3d.
Ditto three times - ditto 8d.

Sash frames, &c.

Sash frames done twice in oil each 1s.
Sash squares ditto - per dozen 1s.

Graining and varnishing.

Mahogany grained per yd. super. 2s.
Ditto and varnished - ditto 3s.

GLAZIER'S WORK.

For squares under 2ft. super.

New green glass - per ft. super. 8d.
Newcastle crown in sashes ditto 1s. 3d.
Second crown glass in sashes ditto 1s. 5d.
Best Newcastle crown glass ditto 1s. 7d.

PLUMBER'S WORK.

Gutters, &c. - per cwt. 39s.
Sash weights - - ditto 41s.
Backs of sinks, coppers, &c., including solder - ditto 42s.
Solder - - ditto 105s.
Milled lead for hips, flashings, &c. - - ditto 41s.
¾in. pipe - - per yard 4s.

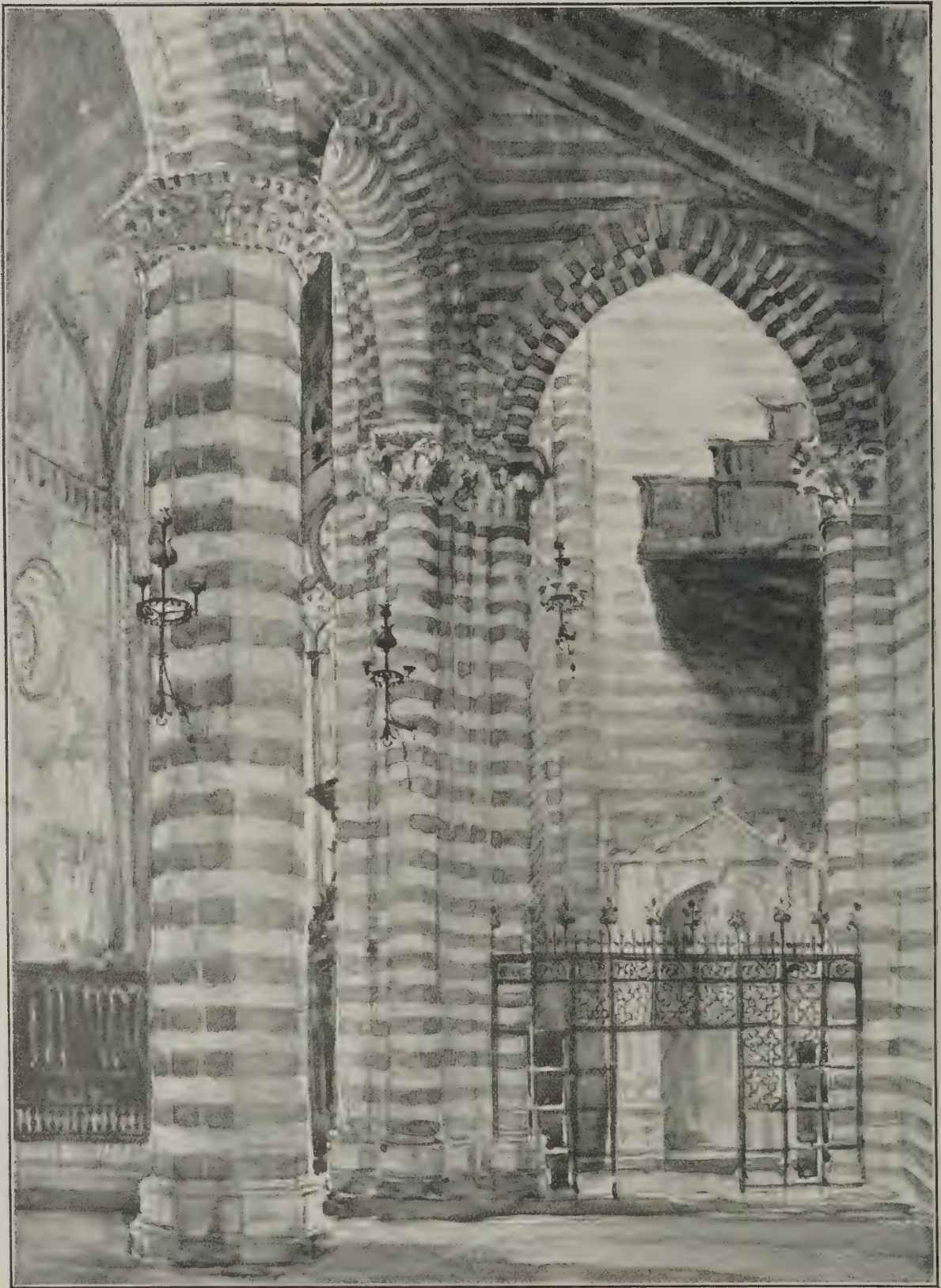
BLACKSMITH'S WORK.

Done by weight.

All sorts of hammered work, as chimney bars, stays, shutter-bars, pumpwork, bolts, dogs, gudgeons, and all black work of the same kind per lb. from 5½d. to 6d.
Large screw bolts and nuts ditto 7d. to 8d.
Iron doors and shutters - ditto 10d. to 1s.

In dealing more particularly with the changes which have occurred during the past century we cannot but notice the great alterations which has occurred in the method of carrying out building works. A hundred years ago the present system of keen competitive tendering under a detailed bill of quantities for the erection of buildings complete in every detail was practically unknown. The prototype of the experienced general contractor of to-day, who is prepared at a moment's notice to quote an inclusive price for and execute the whole of the different works required in the construction of any building—whether church, chapel, hospital, mansion, &c.—was not then

Supplement to
THE BUILDERS' JOURNAL AND ARCHITECTURAL RECORD,
Wednesday, March 23rd, 1904.



SOUTH AISLE ORVIETO CATHEDRAL.



EAST END ORVIETO CATHEDRAL.

easily found. Many of the master tradesmen confined their business entirely to the particular trade or craft to which they had been brought up, and a great proportion of the work carried out by them was charged under the system of daywork and materials. The workmen employed in the different building trades were generally paid at an agreed rate per day, or by piece-work, the latter system being adopted to a very considerable extent. Apparently, however, the prices paid for piece-work of the same description differed considerably even in the metropolis, for we find that at the beginning of last century the Master Carpenters of London endeavoured to draw up a scale of standard piece-work rates for general adoption within that area. In 1810 the result of their labours was published as a trade price-book, and as such it forms a very instructive record.

This scarce and interesting pamphlet—consisting of forty-six pages—was entitled "The prices of Journeymen's measured work, revised and corrected by the Committee of Master Carpenters, and agreed to at a general meeting of the trade. To be had of the Treasurer, Mr. John Cooper, Old Change, London, 1810." The reasons given by the Master Carpenters for the adoption of a recognized scale of payment are set forth in the preface, where it is stated that "at a general meeting of the Trade held at the Crown and Anchor Tavern, Strand, July 7th, 1810, it was unanimously resolved, that a committee of Master Carpenters should be appointed to prepare a list of prices for journeymen's labour. A committee was accordingly appointed, consisting of men regularly brought up from their youth in the practice of the business, and fully competent to judge of the price of labour, who after taking into their consideration the high price of the several necessities of life, as well as the advance on journeymen's tools, and wishing to pay particular attention to the ingenious mechanic, thought it proper, as a stimulus to good workmen initiating themselves into the best methods of carpentry and joiner's works. Upon a minute and deliberate investigation, flattering themselves they had succeeded in their efforts, they submitted this work before a general meeting of the Trade, held at the aforesaid Tavern on the 24th of August following, when each article was carefully read over, revised, and unanimously approved of. It was then recommended to print and publish the same, which the Committee beg leave to submit to every Master Carpenter in the trade, to whom the use of this most valuable publication, which has long been wanted for the general benefit of both masters and journeymen, is best known; and it is earnestly recommended to adopt the method of paying journeymen by measurement."

The prices thus decided upon were for labour only in preparing or fixing carpenters' and joiners' work when executed by piece-work. A few representative items are here given:—

Prices of Carpenters' Work settled upon by the Master Carpenters in the Year 1810.

LABOUR ONLY.		
ROOFING (per square).		
	s.	d.
Common shed roofing not exceeding 12ft. high	4	0
Ditto with purlins	4	6
Ditto three storeys high	5	4
Single span roofing, including plates and ridges not exceeding 12ft. high	5	0
Ditto, three storeys high	5	10
Framed principals with beams, king-posts, purlins, braces and common rafters complete, including plates	16	0
All ironwork to the aforesaid roofs	per lb.	0 1
FLOORS (per square).		
Single-framed floors trimmed to chimneys and well-holes		6 6

FLOORS (per square)—cont.		
	s.	d.
Framed floors with girders, binding, bridging and ceiling joists	17	0
Ground joists bedded (not framed)	3	0
Ditto pinned down on plates, and framed to chimneys	5	0
QUARTER PARTITIONS (per square).		
Common 4in.	5	0
Truss framed with king- and queen-posts	10	6
FIR TIMBERS (per ft. cube).		
Fir in bond, lintels, &c.	0	4½
Ditto rough framed in naked floors, roofs, &c.	0	7
Planing fir, including squaring, &c. (per ft. super.)	0	1
BRACKETING (per ft. super.).		
Bracketing, including plugging, to common cornices	0	3½
CENTERING (per square).		
Common centering to vaults	6	0
Ditto to apertures (per ft. run)	0	1
INCH DEAL (per ft. super.).		

	From the bench.	Fixed.
	d.	d.
Rough	—	0½
Wrought one side	1½	2½
Wrought both sides	2	3

ROUGH BOARDING (per square).		
	s.	d.
¾in. and 1in. deal	2	6
Ditto edges shot	3	3
Ditto ploughed and tongued	5	0
If any of the aforesaid are to ceiling, add per square	0	9
Rough weather-boarding	2	9

BATTEN FLOORS (per square).		
	s.	d.
1½in. common straight joint	12	0
Ditto tongued headings	15	0
Ditto and doweled	24	0

N.B.—The aforesaid floors are to be gauged to a width, and the straight joint edge nailed.

SASH FRAMES (per ft. super.).		
	From the bench.	Fixed.
	d.	d.
Deal cased frames, oak sunk sills for 1½in. or 2in. sashes prepared to hang double	—	3
Plain solid deal frames, oak sunk sills, weathered, throated, rebated, and beaded for French casements	—	3

SASHES (per ft. super.).		
	s.	d.
1½in. ovolo moulded sashes	2½	—
2in. and 2½in. ditto	3	—

DOOR LININGS (per ft. super.).		
	From the bench.	Fixed.
	d.	d.
1in. and 1½in. single rebated and beaded	3½	4½
Ditto double rebated and ditto	4½	5½

DOORS (per ft. super.).		
	From the bench.	Fitted and hung.
	d.	d.
¾in. and 1in. deal rough door	1½	2½
Ditto ploughed and tongued	2½	3
Ditto wrought	2½	3½
Ditto ditto ploughed, tongued and beaded	3½	4
1½in. and 1¾in. four panel square framed door	3½	4½
Ditto bead butt and square	4½	5½
Ditto moulded and square	4½	5½
2in. framed and braced, and filled in with 1in. ploughed, tongued and beaded boarding	6	7½
Ditto ditto with battens	6½	7½
2½in. and 3in. ditto ditto	7½	9

If the last-mentioned are framed with a wicket, add ½th.

PREPARING FLOORING BOARDS.		
To be listed, gauged to a width, and rebated to a thickness.		
	From the bench.	Fixed.
	d.	d.
12ft. inch white deals	—	3½
Ditto yellow ditto	—	4
Ditto inch and quarter ditto	—	4½
Ditto inch and quarter battens	—	3

Although the powerful labour organizations or trade unions which have now been built up for the preservation and recognition of the rights and privileges of labour were practically non-existent at that period (for the ancient trade guilds varied in many respects from the present-day trade combinations), yet the difference of opinion between employers of labour and workmen as to the proper rate which should be paid for labour still existed, and the workmen were not slow in making known their own views upon the subject.

Accordingly, we find the carpenters and joiners entering upon a counter-movement for securing higher labour rates in measured work than those agreed upon by the Master Carpenters, and in March, 1811, they issued a pamphlet of fifty-eight pages entitled "The Journeymen Carpenter and Joiner's guide to the price of labour. Published by order of the Trade. Printed by J. Macdonald, 3, Harris's Place, Pantheon, Oxford Street, London." Evidently the men viewed with some suspicion the motives underlying the action of the Master Carpenters in determining the labour rates to be paid, and were scarcely prepared to attribute it altogether to kindly solicitude for their general welfare; for in an introduction to this guide it is remarked that "it will be proper to remind the Trade, that, in consequence of an advance of 4s. per week on our wages in June 1810, the masters thought proper to arrange and publish a book intitled 'Journeymen Carpenters' measured prices, from the bench and fixed,' a committee of twenty-one members was appointed to prepare the same, and a strict injunction given, that the work be kept a secret from us,—it was also requested, that no person be permitted to take a copy. We ask, what need of secrecy if they intended any good to us or the public, as their preface implies? Did they suppose there was ever a cover large enough to hide itself. Consistency is everything, and we leave them to reconcile the items of their book with the preface, convinced that the public will easily determine aright, and proceed to the work which you have thought proper to honor us with your confidence to execute. We conceive, from the best of all possible knowledge, experience, that the prices contained in the following work are absolutely necessary in order to accord with our present wages."

The workmen, however, not content with the vigorous home-thrusts contained in the foregoing introduction, and apparently possessed with a very lively sense of the utter inadequacy of the prices proposed, further follow up their attack by a prefatory note in which they proceed to severely criticize the reasons advanced by the Master Carpenters in attempting to set up an agreed scale of prices. In very quaint and incisive language the preface goes on to remark "that a work of so much importance as this little treatise on the real value of labour, and applicable to the most useful and intricate parts of science, should have been attempted by men whose situations in life preclude that information necessary to draw right and just conclusions (a fact demonstrated by the want of method in their works now extant) or by others professing to themselves to have been brought up to the regular practice of business (we suppose the regular profits of business), but whose peculiar interests has rather clouded their understandings, and prevented them from doing justice to their employers, to us, or themselves. But, lest we should err, we refer our reader to the price book published by the Masters in 1810, reminding him it is very scarce and dear,—viz., one guinea!!! But, considering masters as builders, they are united in one person, employer and master. If power concentrated for a general good, we think we should not have had a just cause for publishing the following book:

nor architecture, its elegance and utility in finishings, prostrate; or task-masters, like our labour, increased, by the more refined art of getting wealth. Let masters say to each other, and make themselves believe it if they can (while they intended to keep it a secret from us), that their intention was to reward men who had initiated themselves in the best methods of workmanship. We know that society has been enriched by us with useful knowledge, that speculative geometry has directed us to new discoveries, by which, designs, and that of our own production, has been executed in a much easier, expeditious, and more elegant manner. Much more might be advanced without improper assumption or dictation,—disclaiming which, we only wish to act as men. We are well aware our prices exceed those of the masters, and we are fully convinced, that the Masters' book of Prices is much too low, and as a proof we cite those twenty-one forming the Committee who published the work, and who declared in their preface to have been regularly brought up to the practical part of the business, as well as the few who met them at the Crown and Anchor, and sanctioned their proceedings, each to execute different parts of the business as pointed out by us, and if they can earn the wages now given, calculated at their prices, we will consent to accept their book, and that our labour be regulated by its contents. If not, we shall feel ourselves compelled reluctantly, not only to publish, but establish, what experience has taught us to conceive a fair and equitable price-book, proper to remunerate us for the vast expense we are at, the risk we run and the labour we perform; and in order to avoid, as much as possible, anything like error or exaggeration, we have added 140 items not mentioned in that book—and we are well aware numbers are still omitted, which we choose rather to pass over than insert at random—being works of the same denomination, yet so varied in execution, that the same work apparently, will in reality, deserve double the price. We, therefore, intreat those who may have such work to do in future, to take particular notice of the time it takes, and commit it to writing, that it may be hereafter arranged, printed, and added to this book, which will produce a systematic work, and bid defiance to those who, in the face of truth and justice, may think proper to oppose it."

(To be continued.)

Keystones.

A Bronze Statue of Lecky is proposed to be erected within the precincts of Trinity College, Dublin.

Manchester Soldiers' Memorial.—Mr. Hamo Thornycroft has been asked to undertake this work, to cost about £2,000.

For King's College Hospital, which is to be removed to Camberwell, fifty thousand bricks have been promised. Out of the £300,000 required £106,762 has been received.

The Dublin Technical School.—As a result of the exposure of the scheme in connection with the proposed technical school at Rutland Square, the entire subject is to be reconsidered.

A Statue of Bishop Creighton is to be erected in St. Paul's Cathedral. The full-size model has now been completed by Mr. Hamo Thornycroft, R.A., and will shortly be cast in bronze.

New Southwark Bridge: Important Decision.—Last week the Select Committee of the House of Commons said they would not allow the Corporation to raise the north approach, as proposed in connection with the reconstruction of Southwark Bridge, for which £480,000 is required. Further consideration of the Bill has now been adjourned until after Easter.

The new Belfast Cathedral, of which Sir Thomas Drew is the architect, will be formally opened on June 2nd.

A Roman Catholic Church at Portobello, Edinburgh, is to be erected from designs by Mr. J. T. Walford, of Joppa.

A new Town Hall at Darvel is to be erected at a cost of £4,250 in Main Street, from plans by Mr. T. H. Smith, of London.

A Statue of Canon Major Lester is to be erected in St. John's Gardens, Liverpool. The commission has been given to Mr. George Frampton.

A Manchester Sham.—Additional buildings for Owens College are now being erected in Burlington Street, Manchester, in Renaissance style, with painted wooden imitation sham stone cornice and pediment, adjoining Mr. Waterhouse's Gothic college buildings.

Torquay Competition.—About 100 designs have been submitted in competition for the new Town Hall and Free Library at Torquay. Originally there were no fewer than nearly 300 applications for the ground plans and conditions attached to the competition. The sum of £15,000 has been agreed upon as the amount to be spent on the Town Hall and Municipal Buildings, and Mr. Carnegie's gift for the Free Library is £7,500, making together £22,500. It is, however, anticipated that the total outlay will be about £30,000.

Leeds and Yorkshire Architectural Society.—The "Green Book" for 1903-04 has been issued—by the way, the only green about it is a narrow cloth strip over the back, the cover being of brown board. All matters relating to the Society are contained within its 132 pages, including Mr. Butler Wilson's last presidential address and the recommendations of the council in regard to the registration of architects. It is clearly printed on a stiff rough paper and forms a very neat little volume.

Wallsend School Competition.—Mr. W. S. Braithwaite, architect to the Leeds Education Committee, who was appointed to adjudicate on the designs submitted in competition for the proposed schools at West View, Wallsend, has placed first the design by Mr. W. H. Knowles, F.S.A., architect, 37, Granger Street, Newcastle, and second that of Mr. J. H. Morton, South Shields. Thirty sets of designs were sent in. The schools are arranged in two blocks, one for senior and junior boys and girls, and the other for infants, and are intended to accommodate 1,300 children. Mr. Knowles, whose design has been accepted, was successful in a recent competition for a large school now being erected at Whitley by the Northumberland Education Committee.

Workmen's Dwellings.—The Marylebone Borough Council's first scheme of workmen's dwellings is now being carried out in John Street, Edgware Road—a building of seven storeys, with 18 tenements of one room each, 24 of two rooms and 10 of three rooms, a total of 96 chambers, in addition to which there are two washhouses on each floor. Mr. Harry B. Measures, F.R.I.B.A., who has designed the Rowton Houses, is the architect.—The Ecclesiastical Commissioners, finding an estate of about 22 acres of Walworth slums on their hands owing to the falling-in of a lease granted 100 years ago, propose to clear the site and erect model cottages. The first contract has been let for 50 cottages; adjoining will be 8 cottage flats, containing 16 suites of 3 rooms and a wash-house each, and 2 three-storey tenement houses. On the rest of the property 34 five-room and 87 four-room cottages, 96 cottage flats, 489 three-room and 87 two-room tenements will be erected. In all, accommodation for 800 families in 2,447 rooms will be provided. Miss Octavia Hill and her committee of lady visitors will manage the estate.

Extensive Street Improvements at Aberdeen.—The Gallowgate, Aberdeen, is to be widened between Broad Street and Seamount Place from an average of 28ft. 6in. to 40ft. Broad Street and College Street are also to be widened, the former necessitating the reconstruction of the municipal buildings. A new street is to be made between the Middle Public School and St. Margaret's Episcopal School, a terrace laid out on the high ground overlooking the bay, and a new street made from Holburn Street, opposite Great Western Road, to Springbank Terrace. The total cost of the works will be £160,000.

Builders' Notes.

The Havelock Patent Plaster Partition Co., of 63, Finsbury Pavement, London, E.C., have secured the order for partitions for St. Luke's Hospital extension.

The Isolation Hospital, Cheadle, Staffs., has been supplied by Messrs. E. H. Shorland & Brother, of Manchester, with their patent Manchester stoves with descending smoke flues, Manchester grates and special inlet and outlet ventilators.

Labour in February.—The Labour Department of the Board of Trade reports that employment in the building trades continued dull during February and was much the same as in January, but rather worse than a year ago. The percentage of unemployed trade-union members among carpenters and joiners was 6'9 at the end of February, compared with 7'7 at the end of January and 5'0 at the end of February, 1903. The percentage for plumbers was 9'3 at the end of February, compared with the same percentage in January and 8'2 a year ago.

Furniture Trades' Provident and Benevolent Association.—The first annual general meeting of this Association will be held to-morrow, March 24th, at the Criterion Restaurant, Piccadilly, W., at 7.30 p.m. In December last it was decided to circularize the whole of the furniture and allied trades throughout the British Isles, in order that the formation of the new benevolent association might become generally known. Nearly 20,000 circulars were posted at a cost of considerably over £200, and many new subscribers were enlisted in consequence. This was done at the sole expense of the president, Mr. S. J. Waring, junr., who has generously given several thousands of pounds to the Association.

Glass-enamelled Iron Drain Pipes.—A correspondent having raised a question in regard to these pipes as spoken of in Mr. S. L. Bartholomew's paper on "Underground Conveniences," published in our issue for February 17th, we communicated with the author, who says: "I mentioned that I had in one convenience used iron drain pipes, and further mentioned that I was of opinion that it was a great mistake not to use iron pipes in all conveniences. I mentioned, by the way, that in this particular instance the pipes were glass-enamelled, and that in my opinion they were not satisfactory. I was asked by Mr. Wright to state my objection. The reply does not appear very clear, and I should imagine that the reporter could hardly have understood what I said (not our own reporter—Mr. Bartholomew is referring to another journal). I certainly did not intend to leave the impression that the pipes could not be cut. What I wished to convey was, that the pipes used in straight lengths were satisfactory, but as soon as the pipe was cut the glass-lining became frayed and chipped, thus leaving the iron exposed to the action of sewage."

Enquiries Answered.

The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Cost of School.

ASHBY-DE-LA-ZOUCH. — RURAL writes: "What is a fair average sum to allow per scholar in estimating the cost of a school, all on ground floor?"
7d. per ft.-cube.

Sanitary Institute Examinations.

AYLESBURY. — G. G. L. writes: "I am thinking of studying for the Sanitary Institute certificate, and should feel obliged if you would tell me what books you consider the best for same."

Apply to the Secretary of the Sanitary Institute, Parkes Museum, Margaret Street, W., for syllabus and list of books.

Darkening Oak.

CARDIFF. — I. P. J. writes: "A piece of newly-carved oak is intended to match some old oak of a darker colour and has been treated with ammonia and linseed oil, applied with a brush. This has failed to darken it. What would produce the desired effect?"

The method of darkening and staining oak is given on p. 392 of our issue for December 19th, 1900.

Cycling Tour for Easter.

LONDON, N. — F. M. writes: "Kindly give an outline of a week's cycling tour at Easter for three students—some place near the sea, preferably on the south or south-west coast, but not of the usual watering-place type."

If cycling be the main object, taking merely a tourist's glance at many buildings, I would suggest starting at Chichester (for the cathedral and market cross), then passing on in turn to Arundel, Porchester Castle, Winchester (for the cathedral, college and St. Cross), Netley Abbey and Christchurch near Bournemouth, seeing, perhaps, some of the less-known Saxon churches, such as Corhampton and Boarhunt, on the way. On the other hand, if real architectural study be intended, less distance should be covered and more time given to each place, with foot rule, tape and sketch-book. Do not be led away by the impression that if you have seen much during a pleasant cycling ramble you have necessarily learnt much.

M.

Park Fencing.

LONDON, N. — J. W. writes: "At the bottom of my garden there is a dilapidated fence that hangs over on my ground. I have asked the adjoining owners to put the matter right, but they say the fence belongs to me. Is this so? The posts and rails are not on my side. There are gin, party-walls on each side."

Prima facie, upon the evidence of your sketch, it is very clear that the paled fence you mention does not belong to you (the rule being that the "nails must be driven homewards,") but of course documentary evidence may exist proving the contrary. The mere fact of ownership, however, does not involve any liability to maintain the fence in repair, and your neighbour need not necessarily fence his land at all (unless indeed he has cattle on his land which would otherwise trespass on yours). You would be justified in removing so much of the dilapidated fence as forms an encroachment upon your property, but you should place the portion removed on your neighbour's land. You must not make use of the material.

F. S. I.

Fee for Taking Levels.

LONDON, E.C. — H. R. H. writes: "What is the customary rate to charge for carefully levelling over a large estate of a very undulating nature for the purpose of compiling a report as to the best and most economical ways and means of drainage and development for building purposes?"

There is no recognized scale of fees; the work being charged for according to time and trouble involved. It usually works out at about 2½ per cent. on the estimated cost.

Determining Circumference of Circle.

LONDON, W. — J. C. writes: "Is there a geometrical problem defining the actual circumference of any given circle, or a problem giving the exact portion of a circle left after attempting to get the circumference by multiplying the diameter by three (the school-boy method)?"

Yes, the method is to calculate by trigonometry the lengths of the bounding lines of an inscribed regular polygon, the ratio being carried to any number of decimal places by increasing the number of sides. The problem, however, is indeterminate, as the number of sides can be increased indefinitely. For all practical purposes you may reckon the circumference of a circle to be 3.14159 times its diameter (3½ is a fraction often used). The ratio of the diameter to the circumference which is fixed is expressed by the Greek letter π in algebraic calculations. You can find further information on the subject in Lock's "Elementary Trigonometry," from our offices (4s. 6d. post free).

Books on Road Making and Civil Engineering.

GLOUCESTER. — J. B. & S. writes: "Can you name a good book on road-making, sewerage, waterworks and the heavy class of contract work—not building; a book giving the latest methods of contractors in carrying out this class of work, and prices, &c.? A book similar to 'How to Estimate' by J. T. Rea would be just the thing for the estimating part."

There is no book giving exactly what you ask, namely the contractor's side of the subjects named. "The Municipal Engineers' Specification," which we shall publish to wards the end of this year, will fit your requirements best, but for the moment we can only recommend L. F. Vernon Harcourt's "Civil Engineering as applied to Construction" (14s.); Wm. H. Maxwell's "Construction of Roads and Streets" (4s.) and J. Bartlett's "Quantities for Roadmaking and Sewer Construction," (8s.). These books can be obtained from our offices for the prices mentioned post free.

Buildings to Measure for R.I.B.A. Intermediate Examination.

NORTHAMPTON. — YOUNG ARCHITECT writes: "Kindly name a suitable work to measure in Northamptonshire (near Northampton if possible) for the intermediate examination of the R.I.B.A. Also, are there any buildings of merit near the road from Northampton to Bedford?"

The church at Earl's Barton is especially interesting, the tower alone being earlier than the Norman Conquest; the south door is Norman, with ornamented mouldings and shafts, the chancel arch retains some work of the same period, and in the lower part of both its north and south walls an exceedingly rich Norman arcading still remains. The remainder of the church is late Decorated or Perpendicular in style, and there is also a good Jacobean pulpit in black oak. Barnack Church is even more interesting. The tower in its lower stages is Saxon, while its upper stages, the southern door and the pier arches of the nave indicate the transition from Norman to Early English. The south porch is in the latter style, and is an exceedingly fine example. Of its several chapels one

dates from the Decorated period, while the largest is Perpendicular. It is an exceptionally interesting church, with the late Norman arches of the nave, exhibiting marked difference of design and ornamentation, the singular little clearstory above with its square openings and trefoil lights, the porch with its high-pitched stone roof, and the stone staircase and groining inserted in the old Saxon tower at the end of the twelfth century, when the bell-chamber and low spire were added. Besides these two well-known churches, however, there are many more of great interest in the neighbourhood. It is, in fact, scarcely possible to make a mistake, almost every village yielding something worth measuring.

M.

HALIFAX. — AGNOSTIC writes: "(1) Is there anything at Kirkstall Abbey later than Norman work worth measuring for the R.I.B.A. intermediate examination? (2) What is best and most suitable at York, as my time there can only be short? (3) Is Bolton Abbey worth visiting? (4) Do you know of any other places near these where good work can be found?"

Kirkstall (Cluniac) Abbey was built between 1152-82 A.D. The style is Norman, but with pointed arches in the nave in the interior, and round arches on the exterior. It hardly complies as to date with the R.I.B.A. intermediate requirements. (2) The west front of York Minster is Decorated, the north transept is Early English and is remarkable for the exquisite "Five Sisters" window, below which is a very fine Early English arcade. The east end is fourteenth century and is remarkable for the magnificent east window; the south transept is very fine Early English and has a lovely rose window. Of all this only the arcade is within reach for easy measuring, but this should suffice. Permission to measure it should be sought from the Dean in advance, a stamped envelope being sent for reply. (3) Bolton Abbey is well worth a visit. A tendency to the Flamboyant style of tracery is observable in the tracery of the Decorated windows, which are of the later period of the style. The basement mouldings in Bolton Abbey are very fine. For measuring purposes the late fourteenth- or early fifteenth-century west doorway might well be attempted, including a little of the surface panelling beside and above it. This would make a good companion sheet to the York arcade. (4) There is a church at Hemingborough which is a very fine cruciform structure with Early English transepts, choir stalls, tower and spire. The south door is Decorated, and the windows in the transepts are of good Perpendicular work.

G. A. T. M.

Floor-Space in Public Hall.

MALVERN. — DOUBTFUL writes: "I have to prepare drawings for a public hall to seat 400. What is the minimum floor-space per person, including gangway down centre?"

The area assigned to each person should be 2ft. 4in. by 1ft. 8in. Two gangways are usually provided and required by the London County Council Theatre Regulations, and they must not be less than 3ft. wide, but the planning of the gangway and its size will depend upon your exits.

Discovery at Thebes.—The tomb of Queen Hatshepsu, the builder of the beautiful temple of Dêr el-Bâhari, has been discovered at Thebes. Like the other royal sepulchres the tomb of "the Great Queen" consists for the most part of a corridor sloping downward at a somewhat sharp angle into the heart of a limestone mountain. The chamber is from 40ft. to 50ft. in length, and there are several side-chambers opening from it, these, like the chamber itself, having once been panelled with limestone painted with representations of scenes from the Book of the Dead.

Current Market Prices.

				£	s.	d.	£	s.	d.
FORAGE.									
Beans	per qr.	1	14	0	2	0	0	0	0
Clover, best ..	per load	4	0	0	4	7	6		
Hay, good..	do.	3	12	6	4	0	0		
Sainfoin mixture	do.	3	12	6	4	2	6		
Straw	do.	1	10	0	2	0	0		

OILS AND PAINTS.

Castor Oil, French ..	per cwt.	1	0	5	—	—
Colza Oil, English ..	do.	1	3	6	—	—
Copperas	per ton	2	0	0	—	—
Lard Oil	per cwt.	2	15	0	2	17
Lead, white, ground, car- bonate	do.	1	4	10	—	—
Do. red	do.	1	0	4½	—	—
Linseed Oil, barrels ..	do.	0	16	9	—	—
Petroleum, American ..	per gal.	0	0	7½	0	0
Do. Russian	do.	0	0	5½	0	0
Pitch	per barrel	0	8	0	—	—
Shellac, orange ..	per cwt.	10	4	0	10	9
Soda, crystals	per ton	3	2	6	3	5
Tallow, Town	per cwt.	1	6	6	1	6
Tar, Stockholm	per barrel	1	2	0	—	—
Turpentine	per cwt.	2	3	3	2	3

METALS.

Copper, sheet, strong ..	per ton	70	0	0	—	—	
Iron, Staffs, bar ..	do.	6	0	0	8	10	0
Do, Galvanized Corru-							
gated sheet ..	do.	10	5	0	10	7	6
Lead, pig, Soft Foreign ..	do.	11	17	6	12	0	0
Do, do, English common							
brands ..	do.	12	5	0	—	—	—
Do, sheet English 3lb, per							
sq. ft. and upwards ..	do.	14	0	0	—	—	—
Do, pipe	do.	15	0	0	—	—	—
Nails, cut clasp, 3 in to 6 in.	do.	9	5	0	—	—	—
Do, floor brads ..	do.	9	0	0	—	—	—
Steel, Staffs, Girders and							
Angles ..	do.	5	10	0	6	5	0
Do, do, Mild bars ..	do.	6	0	0	6	5	0
Tin, Foreign ..	do.	125	17	6	126	7	6
Do, English ingots ..	do.	127	10	0	129	0	0
Zinc, sheets, Silesian ..	do.	24	5	0	—	—	—
Do, do, Vienne Montaigne							
Do, Spelter ..	do.	21	15	0	22	5	0

TIMBER.

Soft Woods.

Fir, Dantzic and Memel ..	per load	1	13	0	3	0	0
Pine, Quebec, Yellow ..	do.	5	5	0	6	5	0
Do, Pitch	do.	2	5	0	3	0	0
Laths, log, Dantzic ..	per fath.	4	10	0	5	10	0
Do, Norrköping ..	per bundle	0	0	7½	—	—	—
Deals, Saguenay, Spruce,							
Unsorted, 3x9 ..	per std.	8	10	0	—	—	—
Do, Archangel, White, 1st,							
3x9 ..	do.	12	0	0	—	—	—
Do, do, 2nd, 3x11 ..	do.	11	0	0	—	—	—
Do, do, do, 3x9 ..	do.	9	10	0	—	—	—
Do, do, Yellow, 3rd,							
3x11 ..	do.	12	0	0	—	—	—
Do, do, do, 3x9 ..	do.	12	15	0	—	—	—
Do, Galatz, White, 3rd,							
3x11 ..	do.	7	15	0	—	—	—
Do, Norrköping, White,							
Unsorted, 3x9 ..	do.	8	5	0	—	—	—
Do, Süderhamm, Yellow,							
3rd, 4x9 ..	do.	16	0	0	—	—	—
Do, do, do, 3x9 ..	do.	15	10	0	16	10	0
Do, Petschora, Yellow,							
3rd, 3x9 ..	do.	11	0	0	11	10	0
Do, Umba, Yellow, 3rd,							
3x9 ..	do.	11	0	0	—	—	—
Do, do, do, 3x11 ..	do.	10	10	0	10	15	0
Do, Gefle, Yellow, mixed,							
4x9 ..	do.	23	15	0	—	—	—
Do, do, do, 3x11 ..	do.	25	5	0	—	—	—
Do, do, do, 3x9 ..	do.	21	5	0	—	—	—
Do, St. Petersburg, Yell,							
1st, 3x11 ..	do.	15	10	0	15	15	0
Do, do, do, 3x11 ..	do.	12	15	0	14	5	0
Do, Quebec Spruce, 2nd,							
3x9x13ft. ..	do.	10	0	0	—	—	—
Do, do, do, 3rd,							
3x9x13ft. ..	do.	8	15	0	9	0	0
Do, do, do, 3rd, 3x7 ..	do.	7	10	0	—	—	—
Do, do, Yellow Pine,							
3rd, 3x9 ..	do.	9	15	0	—	—	—
Do, Montreal, Yellow							
Pine, 1st, 3x11 ..	do.	30	0	0	—	—	—
Do, do, Red Pine, 1st,							
4x11 ..	do.	17	0	0	—	—	—
Do, do, do, 1st, 3x9 ..	do.	15	5	0	—	—	—
Do, do, do, 2nd, 4x11 ..	do.	13	10	0	—	—	—
Do, do, do, do, 3x11 ..	do.	12	0	0	—	—	—
Do, do, do, do, 3x9 ..	do.	11	0	0	—	—	—
Battens, all kinds ..	do.	6	5	0	12	5	0
Scantlings	do.	6	10	0	9	15	0
Flooring Boards in, pre-							
pared, 1st ..	per square	0	8	9	0	12	6
Do, 2nd	do.	0	8	3	0	9	9
Do, 3rd, &c. ..	do.	0	7	0	0	10	6

HARD WOODS.

Ash, Quebec	per load	3	12	6	—
Birch, Miramichi, Planks, 3x5 to 16in. ..	per cu. ft.	0	0	11½	—
Box, Turkey	per ton	15	0	0	20 0 0
Cedar, Cuba	per ft. sup.	0	0	4½	—
Do. Honduras ..	do.	0	0	4½	—
Do. Tobasco ..	do.	0	0	5½	—
Elm, Quebec	per load	4	2	6	—
Mahogany, Average Price for Cargo, Honduras ..	per ft. sup.	0	0	6½	—
Do. African ..	do.	0	0	4½	—
Do. St. Domingo ..	do.	0	0	3½	—
Do. Cuba ..	do.	0	0	6½	—

		£	s.	d.	£	s.	d.
Mahogany, Average Price							
for Cargo, Lagos ..	per. ft. sup.	0	0	3 ¹⁰ ₄	—		
Do, Benin ..	do.	0	0	4 ⁸ ₄	—		
Do, Tobasco ..	do.	0	0	7 ³ ₄	—		
Oak, Libau, Crown							
Wainscot logs ..	per load	2	15	0	—		
Do, Fume round logs ..	do.	3	7	0	—		
Do, Quebec ..	do.	4	10	0	—		
Teak, Rangoon, planks ..	do.	8	0	0	15	10	0
Do, do. logs ..	do.	11	5	9	—		
Do, Indian planks ..	do.	12	5	5	—		
Do, Moulmein logs ..	do.	6	10	0	8	0	0

FORMATION OF BUILDING MATERIALS.

THE subject of the fourth of the series of lectures on geology by Mr. A. McWilliam, A.R.S.M., in connection with the University College Extension Scheme in the Attercliffe Vestry Hall, Sheffield, was "The formation of building and refractory materials." He said all rocks having been formed from igneous, he would consider these first. Igneous rocks varied in composition and structure. Those of a glassy nature were obviously unsuitable, and the great representative of the crystalline class was granite. As granite consisted mainly of two minerals, quartz (whose hardness was proportionately 6), and felspar (whose hardness was 7)—whilst the hardness of a best quality Sheffield pocket-knife blade, properly hardened and tempered, was 6½—the wearing powers of granite would be readily understood. In the world's history granites and similar rocks had been decomposed, and as quartz remained untouched it formed grains of sand and ultimately sandstone, coarse or fine, according to the sizes of the crystals in the original rock. Felspar, which consisted of silicates of potash, soda, lime and alumina, was decomposed, the silicate of alumina merely taking up water and becoming the basis of all clays, and the more pure it was the more suitable for furnaces employing medium temperatures, such as annealing furnaces, while the more impure deposits were available for the making of bricks, tiles, &c. The other silicates decomposed and formed such substances as common salt, nitre, limestone, and material and soluble silica. Variable quantities of soluble substances were washed away, hence the varying qualities of clay. Among the more basic rocks there were silicates which gave iron and magnesia compounds. Pure clay, with less than about 2 per cent. of potash and soda, was a fireclay, if white a china clay or a pipeclay, while containing 5 per cent. of oxides of iron and generally a fair amount of potash and soda it became an ordinary red brick clay, which was of slightly more value if it gave on burning the pleasing terra-cotta colour. Again, the pieces of quartz, if cemented into a solid rock by means of nearly pure silica, as in local gneiss, were suitable for making silica bricks for our highest furnace temperatures, but if impure and cemented with a small quantity of clay they had the type of the best building stones of the district, specially reliable samples of which began their useful life as Sheffield grindstones and ended it in various forms, from building a weir to becoming the seat of honour in some ingle nook. It would appear that the smaller the amount of clayey matter that would serve as cement the better the stones for building. Limestone, as a stone and in the preparation of lime and mortar, was mentioned, the lecturer stating that limestone with clay, when burnt, produced ordinary cement. The limestone in which almost half the carbonate of lime had been replaced by magnesia formed the well-known dolomite so much used for lining basic furnaces. Magnesian limestone quarried in the neighbourhood made a mark in the architecture of London, as from a quarry near Anston was taken the stone for the Houses of Parliament.

Obituary.

Mr. H. G. Quartermain, architect and surveyor, of Merton Park, Surrey, died recently at the age of sixty-one.

Mr. P. P. Pugin, of the firm of Pugin & Pugin, architects, died at Bournemouth on March 10th. He was the eldest son of the celebrated Pugin, and executed a very great deal of church work.

Mr. Thomas Cox, architect and surveyor, of Liverpool, died recently. For the last twelve years he was architect to the Bootle School Board, and did extensive work for the Corporation of Bootle.

Mr. William Gibbin, the head of the old-established firm of William Gibbin & Son, builders and decorators, of Pickering Place, Bayswater, died recently at the age of forty-four years.

Mr. H. J. Tollit, surveyor to the Oxford County Council (who designed the new bridges at Sonning illustrated in our columns last week), was found dead on Saturday on the road near Thrupp, having presumably been thrown from a horse.

Mr. D. W. Stevenson, R.S.A., the well-known sculptor, died at Edinburgh last week. He was born in 1842. In 1877 he was elected an associate and in 1886 a full member of the Royal Scottish Academy. He carved a number of public statues for various cities at home and abroad.

Mr. John Kent, builder, of Wantage, died recently at the age of seventy-five years. When his father, who died in 1867, was in the business the firm undertook the restoration of the parish church under the late George Edmund Street. The firm of Messrs. Kent did a great deal of church restoration, including the churches at the two Letcombes, Denchworth and Lockinge.

Coming Events.

Wednesday, March 23.

SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part I.).—Mr. J. E. Worth, M.I.C.E., on "Sewerage," at 7 p.m. Inspection and Demonstration in the District of Hackney, arranged by Mr. J. King Warry, M.D.

GLASGOW ARCHITECTURAL ASSOCIATION.—Mr. W. S. Moyes on "Old Edinburgh," at 8 p.m.

INCORPORATED INSTITUTE OF BRITISH DECORATORS (Northern District).—Mr. Lewis F. Day on "Modernity in Decoration," at the Technical College, Bradford, at 7.30 p.m.

SOCIETY OF ARTS.—Mr. T. Brice Phillips on "The Rural Housing Question," at 8 p.m.

BUILDERS' FOREMEN AND CLERKS OF WORKS' INSTITUTION.—Quarterly Meeting of the Directors at 8 p.m.

INSTITUTE OF SANITARY ENGINEERS.—Extraordinary General Meeting at 4.30 p.m. Council Meeting at 6 p.m.

ST. PAUL'S ECCLESIOLOGICAL SOCIETY.—Mr. G. C. Druce on "Painting and Sculpture in the Roman Catacombs," at 8 p.m.

Thursday, March 24.

CARPENTERS' COMPANY.—Mr. Basil Mott on "The Development of Methods of Locomotion," Carpenters' Hall, London Wall, 8 p.m.

LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY.—Mr. J. Starkie Gardner, F.S.A., on "Architecture in Lead," at 6.30 p.m. Election of Officers.

FURNITURE TRADES' PROVIDENT AND BENEVOLENT ASSOCIATION.—First Annual General Meeting, Criterion Restaurant, Piccadilly W., at 7.30 p.m.

INSTITUTION OF ELECTRICAL ENGINEERS.—Mr. K. Edgcombe and Mr. F. Punga on "Direct Reading Measuring Instruments for Switchboard Use," at 8 p.m.

Friday, March 25.

GLASGOW TECHNICAL COLLEGE ARCHITECTURAL CRAFTSMEN'S SOCIETY.—Mr. Wm. H. Baxter on "Some Woodworking Tools and their Economic Working," at 8 p.m.

SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part I.).—Mr. J. E. Worth, M.I.C.E., on "Sewage Disposal," at 7 p.m.

BIRMINGHAM ARCHITECTURAL ASSOCIATION.—Mr. A. Hale on "The B.A.A. Excursion to Kettering," at 8 p.m.

INSTITUTION OF CIVIL ENGINEERS (Students' Meeting).—Mr. J. M. Kennedy on "The Relative Advantages of Continuous and Alternating Current for Traction Purposes," at 8 p.m.

ROYAL INSTITUTION.—Professor Dewar on "Liquid Hydrogen Calorimetry," at 9 p.m.

Saturday, March 26.

EDINBURGH ARCHITECTURAL ASSOCIATION.—Visit to Gothic Ironworks, Falkirk.

COMING EVENTS.—cont.

GLASGOW TECHNICAL COLLEGE SCIENTIFIC SOCIETY.—Annual General Meeting at 7.30 p.m.
 SANITARY INSTITUTE.—Discussion on "Municipal Rehousing," to be opened by Mr. W. E. Riley, F.R.I.B.A., Superintending Architect to London County Council, at 11 a.m. (Lectures and Demonstrations for Sanitary Officers, Part I.).—Inspection and Demonstration at the Sewage Outfall Works, Barking, at 3 p.m., conducted by Mr. John Edward Worth, M.I.C.E.

Monday, March 28.

SURVEYORS' INSTITUTION.—Third Junior Meeting at 7 p.m.

SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part I.).—Mr. John Edward Worth, M.I.C.E., on "Scavenging, Disposal of House Refuse," 7 p.m.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.—Mr. C. Stanley Peach on "Electric Generating Stations," at 8 p.m.

Wednesday, March 30.

EDINBURGH ARCHITECTURAL ASSOCIATION.—

Mr. Thomas Ross, F.S.A. (Scot.), on "The Remains and Evidences of Roman Architecture in Scotland," at 8 p.m.

ARCHITECTURAL ASSOCIATION (Discussion Section). Mr. G. P. Bankart on "Leadwork," at 7.30 p.m.

SANITARY INSTITUTE (Inspections and Demonstrations for Sanitary Officers, Part I.).—Demonstration at and Inspection of a House in Stoke Newington, at 3 p.m., conducted by Mr. W. Matthews.

Monday, April 4.

SANITARY INSPECTORS' ASSOCIATION.—Meeting at Carpenters' Hall, London Wall, E.C.

Complete List of Contracis Open.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
BUILDING:			
Mar. 24	Bridlington—Wood Landing Stage	Piers and Harbour Commrs. ..	J. Earnshaw, Architect, Carlton House, Bridlington.
" 24	Cork—Improvements, &c.	—	W. H. Hill & Son, 28 South Mall, Cork
" 24	Salford—Lavatory, &c.	—	Borough Engineer, Town Hall, Salford.
" 24	Sandsend, Whitby—Villa	W. E. F. Tinley	E. H. Smales, 5 Flowergate, Whitby.
" 24	Southend-on-Sea—Extension of Engine and Boiler-houses	Corporation	E. J. Elford, Borough Engineer, Southend-on-Sea.
" 24	Brixham, Devon—Bricks and Cement	Urban District Council	J. L. Arlidge, Clerk, Town Hall, Brixham.
" 24	Carlisle—Lime and Cement	Gas Committee	Engineer, Gasworks, Carlisle
" 24	Aston, Birmingham—Bricks	Stores Committee	G. H. Jack, Borough Surveyor, Council House, Aston Manor.
" 25	Burslem—Public Conveniences	Corporation	F. Bettany, Borough Surveyor, Municipal Offices, Burslem.
" 25	Rame Head, near Plymouth—Coastguard Buildings	Admiralty	Superintending Civil Engineer, H.M. Dockyard, Devonport.
" 25	Kilfinane, Ireland—Convent	St. Paul's Convent Committee ..	B. E. F. Sheehy, 57 George Street, Limerick.
" 25	Carmarthen—Stores	Western Counties Agricultural Co-op. Assoc., Ltd.	Association's Stores, Pothouse Quay, Carmarthen.
" 25	Clodock—Bridge	Dore R.D.C.	T. Llanwarne, Clerk, St. John Street, Hereford.
" 25	Halifax—Warehouse	—	R. Horsfall & Son, 22A Commercial Street, Halifax.
" 25	Sheffield—Shops, &c.	—	Gibbs & Flockton, 15 St. James's Row, Sheffield.
" 25	Withington, Lancs—Schools	Urban District Council	E. Woodhouse, 88 Moseley Street, Manchester.
" 25	Darwen, Lancs—Cement and Lime	Corporation	Borough Engineer, Darwen.
" 26	Aberlour, Scotland—Houses, &c.	—	J. Campbell, Station Bar, Aberlour.
" 26	Llanaelhaearn, Wales—House	—	W. W. Jones, Architect, Salem Place, Pwllheli.
" 26	Newbury—Coach-house, &c.	—	A. W. Neate, Newbury.
" 26	Omagh—Villa	—	T. Houston, Architect, King's Court, Wellington Place, Belfast.
" 26	Romsey Hants—Alterations to Police Station	—	W. J. Taylor, County Surveyor, The Castle, Winchester.
" 26	Shoreham, Sussex—Cement and Lime	Urban District Council	A. W. Nye, Surveyor, Town Hall, Shoreham.
" 26	Newcastle-on-Tyne—Widening Bridges	Northumberland County Council ..	County Surveyor, Moot Hall, Newcastle.
" 26	Leyton—Two Houses	—	A. S. Caughey, 19 Avenue Road, Leytonstone, E.
" 26	Garlands, near Carlisle—Additions to Asylum	Asylum Committee	C. W. A. Hodgson, Clerk, The Courts, Carlisle.
" 28	Birkenhead—Sanitary Towers, &c.	Guardians	E. Kirby, 5 Cook Street, Liverpool.
" 28	Drogheda, Ireland—Library	Public Library Committee	J. B. Connolly, Hon. Secretary, Court House, Drogheda.
" 28	Goxhill, Lincs—House	—	H. C. Scaping, Architect, Grimsby.
" 28	Belfast—Extensions to Goods Shed	Harbour Commissioners	G. F. L. Giles, Harbour Engineer, Belfast.
" 28	Salford—School	Education Committee	H. E. Steffox, 6 Princess Street, Manchester.
" 28	Strood, Kent—Cloakroom, &c.	Education Committee	W. B. Knuts, Consulting Architect, Guildhall, Rochester.
" 28	Taff's Well, near Cardiff—Alterations, &c., to Chapel	Trustees of Charities	G. L. Watkins, Architect, Station Terrace, Caerphilly.
" 28	Whitstable—Alterations, &c., to School	—	A. Kemp, Architect, Tankerton Estate Office, Whitstable.
" 29	Knowle, near Fareham, Hants—Three Cottages	W. J. Taylor, County Surveyor, The Castle, Winchester.	Engineer's Office, Hunt's Bank, Manchester.
" 29	Liverpool—Extension of Roofing, &c.	Lancs and Yorks Railway Co. ..	Secretary, H.M. Office of Works, &c., Storey's Gate, S.W.
" 29	London, N.—Extension of Telegraph Factory	Commissioners of H.M. Works, &c. ..	Company's Engineer, Queen's Quay Terminus, Belfast.
" 29	Belfast—Station Master's House	Belfast & Co. Down Rly. Co. ..	Director of Works Dept., Admiralty, 21 Northumberland Av., W.C.
" 29	St. Govan's Head, near Pembroke—Coastguard Houses	Admiralty	Secretary, H.M. Office of Works, &c., Storey's Gate, S.W.
" 29	Hull—Post Office	Commissioners of H.M. Works, &c. ..	Hague & M'Namara, 50 Dawson Street, Dublin.
" 29	Longford—Temperance Hall	District Lunacy Board	W. Alexander, City Architect, Dundee.
" 30	Dundee—Alterations, &c., to Asylum	—	D. E. Thomas, Architect, Victoria Place, Haverfordwest.
" 30	Maenclochog, Pembroke—Chapel	Urban District Council	J. Johnson, 9 Queen Victoria Street, City, E.C.
" 30	Surbiton—Clock Tower	Guardians	A. W. Cross, 23 Valentine Road, King's Heath, near Birmingham.
" 30	King's Norton, near Birmingham—Schools	National Bank, Ltd.	W. Thurnall, Clerk, Brook Street, Kennington Road, S.E.
" 30	Lambeth—Wall	—	B. E. F. Sheehy, 57 George Street, Limerick.
" 30	Doneraile, co. Cork—Addition to Bank	Corporation	W. H. Hill & Son, 28 South Mall, Cork.
" 31	Kinsale, Ireland—Church Works	—	S. Oliver, 44 White Lee Road, Swinton.
" 31	Swinton, Yorks—Alteration of Chapel	—	C. J. F. Allin, Borough Surveyor, Town Hall, Smethwick.
" 31	Smethwick—Cement and Lime	County Council	J. J. Phillips & Son, 61 Royal Avenue, Belfast.
" 31	Belfast—Church	Rural District Committee	J. J. Phillips & Son, 61 Royal Avenue, Belfast.
" 31	Whitehead—Church	—	R. L. Williams, County Surveyor, Denbigh.
" 31	Rossett, Denbighshire—House, &c.	Rural District Council	J. Graham, Engineer, Bank Chambers, Bank Street, Carlisle.
" 31	Carlisle—Bridge, &c.	Working Men's Club	J. Philip, Carpenter, Saw Mill, Drumoak.
April 1	Drumoak, Scotland—Alterations, &c., to Offices	Co-operative Society	J. W. Riggs, St. Elmo, Fanshawe Street, Bengoe, Hereford.
" 1	Waterford, Hertford—Bridge Repairs	Rural District Council	S. Spencer, Architect, Old Bank Chambers Great Horton, Bradford.
" 2	Great Horton, Bradford—Club Premises	Borough Council	J. J. Green, 19 South John Street, Liverpool.
" 2	Urmston, Lancs—Church	—	Secretary, Society's Offices, Downing St., Ardwick, Manchester.
" 5	Stretford and Levenshulme—Twenty-six Houses	Urban District Council	W. J. Corner, Clerk, Union Workhouse, Lurgan.
" 6	Lurgan—Thirty Labourers' Cottages	Metropolitan Asylums Board ..	M. W. W. Jameson, 15 Alie Street, Whitechapel, E.
" 7	Stepney—Electricity Generating Station	Down County Council	E. J. Hamilton, 2 New Road, Brighton.
" 7	Hove—Church and Schools	Corporation	G. W. Holmes, Engineer, Town Hall, Walthamstow.
" 8	Walthamstow—Electricity Generating Station	London County Council	W. T. Hatch, Engineer, Board's Offices, Embankment, E.C.
" 12	Homerton, N.E.—Laundry Buildings	—	R. Macilwaine, Sec. County Council, Courthouse, Downpatrick.
" 15	Newry, Ireland—Extension, &c., to Hospital	—	A. E. King, Architect, Baxter Gate Loughborough.
" 16	Loughborough—Buildings	—	Architect's Department, 13 Charing Cross, S.W.
" 26	Greenwich—Electricity Generating Station	—	Palgrave & Co., 28 Victoria Street, S.W.
No date	Wandsworth—Flats	—	—
ENGINEERING:			
Mar. 24	Devizes, Wilts—Extension of Hot-water Apparatus	Town Council	Borough Surveyor, Devizes, Wilts.
" 24	Treorchy, Wales—Widening, &c., of Bridges	Rhondda Urban District Council ..	W. J. Jones, Surveyor, Public Offices, Pentre, Rhondda.
" 25	Beckley—Tramway Plant, &c.	Corporation	G. Burr, Town Clerk, Town Hall, Keighley.
" 25	Bexhill, Sussex—Storage Tank, &c.	Corporation	G. Ball, Borough Surveyor, Town Hall, Bexhill, Sussex.
" 26	St. Anne's-on-Sea, Lancs—Electrical Plant	Urban District Council	J. H. Clothier, Engineer, Electricity Works, St. Anne's-on-Sea.
" 26	Dartford—Light Railways	Urban District Council	Hawtayne & Zedan, 9 Queen Street Place, London, E.C.
" 28	Barnet—Tanks	Urban District Council	W. H. Mansbridge, 40 High Street, Barnet.
" 28	Chelmsford—Waterworks	Corporation	C. Brown, 16 London Road, Chelmsford.
" 28	Rugby—Refuse Destructor	Urban District Council	D. G. Macdonald, Engineer, High Street, Rugby.
" 28	Wate, Herts—Waterworks	Rural District Council	Bailey-Denton, Lawford & Symons, 9 Bridge St., Westminster, S.W.
" 28	Floriston and Nethercleugh—Steel Work, Superstructures of Bridges	Caledonian Railway Co.	Company's Divisional Engineer, Prince's Street Station, Edinburgh.
" 29	West Hartlepool—Esplanade Wall	Corporation	N. F. Dennis, Borough Engineer, West Hartlepool.
" 29	Biggleswade—Waterworks (3 Contracts)	Urban District Council	G. F. Deacon, 16 Great George Street, Westminster, S.W.
" 29	Glasgow—Trenches, &c.	Corporation	Mr. Wilson, 45 John Street, Glasgow.
" 29	Stockport—Generator	Gas and Electricity Committee ..	A. J. H. Carter, Electricity Works, Millgate, Stockport.
" 30	Gateshead—Boiler	—	Borough Engineer, Town Hall, Gateshead.
" 30	London, E.C.—Bridge	East Indian Railway Co.	C. W. Young, Secretary, Nicholas Lane, London, E.C.
" 30	Handsworth, near Birmingham—Tramways	Urban District Council	H. Ward, Clerk, Council House, Handsworth, near Birmingham.
" 30	Handsworth, near Birmingham—Tramways	Urban District Council	Kennedy & Jenkin, 17 Victoria Street, Westminster, S.W.
" 30	Sunderland—Cables	Corporation	J. F. C. Snell, Borough Electrical Engineer, Town Hall, Sunderland.
" 31	Islington—Washing Machine	Guardians	E. Davey, Clerk, Guardians' Offices, St. John's Road, Upper Holloway, N.
" 31	Swindon—Electrical Plant	Corporation	J. G. Griffin, Engineer, Electricity Works, Swindon.
" 31	Aberdeen—Boilers, &c.	Electric Lighting Committee ..	J. A. Bell, City Electrical Engineer, Millburn Street, Aberdeen.
" 31	Anstruther, Scotland—Quay Wall	Harbour Commissioners	R. Henderson, 5 High Street, Burntisland.
" 31	Conway, Wales—Sewerage and Waterworks	Rural District Council	T. B. Farrington, Engineer, Trinity Square, Llandudno.
April 1	Bodmin—Two Bridges	Rural District Council	J. Petlybridge, Clerk, Mountfoll, Bodmin.
" 2	Montrose, Scotland—Repair of Jetty	Harbour Trustees	W. Ross, 10 Castle Street, Montrose.
" 7	Derby—Sewerage Works	Corporation	J. Mansergh & Sons, 5 Victoria Street, Westminster.

Complete List of Contracts Open—continued.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
IRON AND STEEL:			
Mar. 24	Brixham, Devon—Cast-iron Pipes	Urban District Council	J. L. Arlidge, Clerk, Town Hall, Brixham.
" 24	Carlisle—Cast-iron Pipes	Gas Committee	Engineer, Gasworks, Carlisle.
" 25	Darwen, Lancs—Ironmongery	Corporation	Borough Engineer, Darwen.
" 28	Colchester—Steel Covered Ways	Tramways Committee	H. Goodyear, Borough Engineer, Colchester.
" 28	Glasgow—Steelwork	Caledonian Railway Co.	Company's Divisional Engineer, Prince's Station, Edinburgh.
" 28	Hindley—Ironwork, &c.	Urban District Council	H. O. Timmins, Engineer, Hindley.
" 28	Perth—Cast iron Pipes	Corporation	W. B. M'Lusky, Engineer, Perth.
" 31	Barking—Pipes, &c.	Gas Company	W. B. Reidie, Gasworks, Barking.
" 31	Devonport—Pipes, &c.	Gas Committee	S. E. Stevenson, Engineer, Gasworks, Devonport.
Apr 11	Burnley—Pipes	Rural District Council	S. Edmondson, 18 Nicholas Street, Burnley.
" 13	Adelaide, Australia—Railway Stores		Agent-General for South Australia, London.
PAINTING AND PLUMBING:			
Mar. 28	Perth—Paints and Oils	Corporation	W. B. M'Lusky, Engineer, Perth.
" 29	London, N.—Painting at Baths	Islington Borough Council	J. P. Barber, Borough Engineer, Town Hall, Upper Street, N.
" 29	Worplesdon, Surrey—Painting, &c.	Joint Hospital Board	A. J. Sturges, 25 High Street, Guildford.
April 12	Watford, Herts—Painting, &c., at Asylum	Metropolitan Asylums Board	W. T. Hatch, Engineer, Board's Offices, Embankment, E.C.
" 12	South Tottenham—Painting, &c., at Hospital	Metropolitan Asylums Board	W. T. Hatch, Engineer, Board's Offices, Embankment, E.C.
ROADS AND CARTAGE:			
Mar. 24	Aston, Birmingham—Materials	Stores Committee	G. H. Jack, Borough Surveyor, Council House, Aston Manor.
" 24	Chatham—Road Materials, &c.	Corporation	C. Day, Borough Surveyor, Town Hall, Chatham.
" 24	Grantham, Lincs—Granite and Slag	Kesteven County Council	W. B. Purser, 4 St. Peter's Hill, Grantham.
" 24	Woolston, Hants—Disinfectants	Itchen U.D.C.	T. A. Collingwood, Council Offices, Portsmouth Rd., Woolston.
" 24	Peterborough—Materials	City Council	J. W. Walshaw, City Surveyor, Guildhall, Peterborough.
" 24	Luton—Granite and Slag	Town Council	Borough Surveyor, Luton.
" 24	Eastry, Kent—Flints, &c.	Rural District Council	F. W. Watson, District Surveyor, Eastry, near Dover.
" 24	Chatham—Materials	Corporation	C. Day, Borough Surveyor, Town Hall, Chatham.
" 25	Darwen, Lancs—Materials	Corporation	Borough Engineer, Darwen.
" 26	Hadleigh, Suffolk—Paving	Urban District Council	T. F. Corder, 115 High Street, Hadleigh.
" 26	Ramsey, Hunts—Granite	Urban District Council	F. R. Serjeant, Clerk, Ramsey.
" 26	Repton, Burton-upon-Trent—Materials	Rural District Council	C. F. Chamberlin, Clerk, Union Offices, Burton-on-Trent.
" 26	Wakefield—Street Works	City Council	City Surveyor, Town Hall, Wakefield.
" 28	Dukinfield—Paving, &c.	Corporation	Borough Surveyor, Town Hall, Dukinfield.
" 28	Eastbourne—Private Improvement Works	Highways & Drainage Committee	D. J. Bowe, Borough Surveyor, Town Hall, Eastbourne.
" 28	East Ham—Granite Setts	Urban District Council	A. H. Campbell, Surveyor, Town Hall, East Ham.
" 28	Gateshead—Materials		J. Bower, Borough Engineer, Town Hall, Gateshead.
" 28	London, N.—Road Works	Islington Town Council	E. J. Lovegrove, Borough Surveyor, Muswell Hill.
" 28	London, S.E.—Street Works	Lewisham Borough Council	Surveyor, Town Hall, Catford.
" 28	Sowerby Bridge, Yorks—Materials, &c.	Urban District Council	Surveyor, Town's Buildings, Sowerby Bridge.
" 28	Waterloo, Lancs—Materials	Urban District Council	F. S. Yates, Surveyor, Town Hall, Waterloo.
" 28	Mumbles, Swansea—Materials	Oystermouth U.D.C.	J. H. Robinson, Clerk, Council Offices, Mumbles.
" 28	East Molesey—Materials	Urban District Council	Surveyor, District Council Office, East Molesey.
" 28	Little Hulton, Lancs—Materials	Urban District Council	J. H. Heyes, Clerk, Council Offices, Little Hulton.
" 28	Clayton-le-Moors—Materials, &c.	Urban District Council	A. Dodgeon, Surveyor, Clayton-le-Moors.
" 28	Dorking—Roadmaking	Urban District Council	G. S. Matthews, Town Surveyor, Dorking.
" 28	York—Making-up		A. Creer, City Surveyor, Guildhall, York.
" 29	West Hartlepool—Streets	Corporation	N. F. Dennis, Borough Engineer, West Hartlepool.
" 29	West Malling, Kent—Materials	Rural District Council	J. Marshall Surveyor, West Malling.
" 29	East Grinstead—Road Materials, &c.	Urban District Council	W. E. Woollam, Surv., Council Offices, London Rd., East Grinstead.
" 29	Rushden, Northants—Granite and Slag	Urban District Council	W. B. Madin, Surveyor, Vestry Hall, Rushden, Northants.
" 29	Stanley, Durham—Street Works	Urban District Council	J. Routledge, Surveyor, Council Offices, Stanley.
" 30	Bishop Auckland—Levelling, &c.	Urban District Council	Surveyor, Town Hall Buildings, Bishop Auckland.
" 30	Ealing—Private Street Improvements	Town Council	C. Jones, Borough Engineer, Town Hall, Ealing, W.
" 31	Normanton, Yorks—Materials	Urban District Council	A. Hartley, Architect, Castleford.
" 31	Bicester—Highway Repairs	Urban District Council	H. J. Gibbons, Launton Road, Bicester.
" 31	Sterrington, Sussex—Material and Cartage	Thakeham R.D.C.	A. Flowers, Clerk, Sterrington, Pulborough.
" 31	Smethwick—Materials	Corporation	C. J. F. Allin, Borough Surveyor, Town Hall, Smethwick.
April 2	Great Harwood, Lancs—Materials	Urban District Council	A. H. Dunkin, Surveyor, Town Hall, Great Harwood.
" 2	Sandwich—Materials	Corporation	A. J. Firby, Borough Surveyor, Sandwich.
" 4	Walkden, Lancs—Materials	Worsley U.D.C.	J. A. Corson, District Offices, Hilton Lane, Walkden.
" 4	Shipley, Yorks—Setts	Urban District Council	W. H. Dawson, Surveyor, Shipley, Yorks.
" 5	Beckenham—Making-up	Urban District Council	J. A. Angell, Surveyor, Beckenham.
" 5	Sunderland—Levelling, &c.	Corporation	Borough Surveyor, Town Hall, Sunderland.
" 6	Middleton, Lancs—Road Materials	Corporation	W. Welburn, Borough Surveyor, Middleton, Lancs.
" 11	St. Mellons, near Cardiff—Metalling	Rural District Council	Union Offices, Queen's Hill, Newport, Mon.
No date	Tottenham—Roads, &c.		G. Treacher, 73 Moorgate Street, E.C.
SANITARY:			
Mar. 24	Aston, Birmingham—Stoneware Pipes	Stores Committee	G. H. Jack, Borough Surveyor, Council House, Aston Manor.
" 24	Carlisle—Cement	Gas Committee	Engineer, Gasworks, Carlisle.
" 24	Brixham, Devon—Pipes, Disinfectants, &c.	Urban District Council	J. L. Arlidge, Clerk, Town Hall, Brixham.
" 25	Branksome, Dorset—Stoneware Pipes, &c.	Urban District Council	S. J. Newman, Surveyor, Council Buildings, Branksome.
" 25	Darwen, Lancs—Earthenware Pipes	Corporation	Borough Engineer, Darwen.
" 26	Dewsbury—Disinfectants	Corporation	H. Ellis, Town Clerk, Town Hall, Dewsbury.
" 26	Walsall—Scavenging	Rural District Council	A. H. Lewis, 29 Leicester Street, Walsall.
" 26	London, W.—Sewer	Paddington Borough Council	E. B. B. Newton, Borough Surveyor, Town Hall, Paddington.
" 28	Little Hulton, Lancs—Stoneware Pipes	Urban District Council	J. H. Heyes, Clerk, Council Offices, Little Hulton.
" 28	Waterloo, Lancs—Cement	Urban District Council	F. S. Yates, Surveyor, Town Hall, Waterloo.
" 28	Sandal, near Wakefield Drainage Works	Urban District Council	F. Massie, Tetley House, Wakefield.
" 28	East Molesey—Stoneware Pipes	Urban District Council	Surveyor, District Council Office, East Molesey.
" 29	Twickenham—Refuse Collection	Urban District Council	H. J. Saunders, Clerk, Town Hall, Twickenham.
" 30	Bawtry, Yorks—Sewerage and Sewage-Disposal Works	Doncaster R.D.C.	D. Balfour & Son, 3 St. Nicholas Buildings, Newcastle-on-Tyne.
" 31	Chislehurst, Sussex—Sewerage Works	Rural District Council	Powell & Co., Estate Offices, Lewes.
" 31	Smethwick—Earthenware Pipes	Corporation	C. J. F. Allin, Borough Surveyor, Town Hall, Smethwick.
April 2	Great Harwood, Lancs—Earthenware Pipes, &c.	Urban District Council	A. H. Dunkin, Surveyor, Great Harwood, Lancs.

List of Competitions Open.

DATE OF DELIVERY.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	DEPOSIT REQUIRED FOR CONDITIONS, &c.	BY WHOM ADVERTISED.
Mar. 31	Tipton—Free Library Buildings and Town Hall	£50, £20, £10.	£2 2s.	J. W. Waring, Clerk, Public Offices, Owen Street, Tipton.
" 31	St. Helens—Two Branch Public Libraries	£20, £40.	£1 1s.	W. H. Andrew, Town Clerk, Town Hall, St. Helens.
" 31	Vienna—Machinery to Lift Boats on Canal	100,000, 75,000 & 50,000 kronen.		Austro-Hungarian Consulate-General, 22 Laurence Pountney Lane, E.C.
April 5	Birmingham—Three Public Libraries		£1 1s.	A. W. Cross, 23 Valatine Road, King's Heath, near Birmingham.
" 6	Lurgan, Ireland—Thirty Labourers' Cottages			W. J. Corner, Clerk to R.D.C. Workhouse, Lurgan.
" 8	Perth—Hospital	£31 10s., £21, £10 10s.		J. Begg, Town Clerk, Perth.
" 9	Malvern—Library	£30, £20, £10.	1cs. 6d.	H. L. Whatley, Clerk, Council Offices, Malvern.
" 9	Caine, Wilts—Library			G. I. Gough, Town Clerk's Office, Caine.
" 23	Llandilo, Wales—Drainage Scheme			E. Jones, Glancennan, Llandilo.
" 30	Newcastle-upon-Tyne—Grammar School	£100, £50, £25.	£1 1s.	H. J. Criddle, 2 Collingwood Street, Newcastle-upon-Tyne.
May 9	Barnet—Hospital			C. D. Byfield, 16 High Street, Barnet.
" 31	Stamford—Public Library	£25, £15, £10.	£1 1s.	C. Atter, Town Clerk, Town Hall, Stamford.

Tenders.

Information from accredited sources should be sent to "The Editor" at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Addressed postcards on which lists of tenders may be stated will be sent post free on application to the Manager, BUILDERS' JOURNAL, 6, Great New Street, Fetter Lane, E.C.

Alvaston (near Nantwich).—For the erection of an infectious diseases hospital at Alvaston, near Nantwich, for the Nantwich Joint Hospital Board. Mr. C. E. Davenport, architect, Nantwich:—

G. H. Holt, Lynn	£11,100
G. H. Marshall, Smethwick	10,818
G. Bullock, Shrewsbury	9,370
Smith & Son, Crewe	9,193
J. Williams & Sons, Crewe	9,114
Mickelwright & Sons, Crewe	9,085
J. Harding, Nantwich	8,790
Cox & Vaughan, Nantwich	8,697
T. Huxley, Malpas	8,650
Townson & Sons, Bolton	8,339
Buchall Brothers, Middlewich	8,336
J. Gallimore, Newcastle, Staffs.	8,287
J. T. Gresty, Willaston, Nantwich	8,100
F. Matthews,* Nantwich	7,700

* Accepted

Asknern.—For rebuilding the Railway Hotel, Asknern. Messrs. Garside & Pennington, architects, mining engineers and surveyors, Ropergate Chambers, Pontefract:—

Bourne & Wilkinson, Scunthorpe	£2,298 16 9
F. Foers & Son, Treorton	2,031 2 8
Dennis Gill & Son, Doncaster	1,867 0 0
Kelsey, Goole	1,811 0 0
Ullathorne, Selby	1,840 0 0
J. Bryant & Son, Asknern	1,788 13 9
Thompson & Co., Howden	1,697 10 0
W. Barton, Thorne	1,630 0 0
H. Mollekin, Pontefract	1,584 0 0
W. Darley,* Pontefract	1,562 15 3

* Accepted

Barnard Castle.—Accepted for additions to house, Galsgate, for Mr. J. Burn. Mr. T. Farrow, architect, 7, Market Place, Barnard Castle. Quantities by the architect:—

All trades except joiner: J. Appleby, Barnard Castle.
Joiner: J. Thompson.

Barnard Castle.—For the erection of a house, Staindrop Road, for Mr. J. Hardy. Mr. T. Farrow, architect, 7, Market Place, Barnard Castle. Quantities by the architect:—

Bricklayer and mason.	
R. Wilson	£257 0 0
J. Kyle & Sons	246 0 0
C. Martin*	226 14 10
Joiner, &c.	
G. P. Robinson	120 2 6
J. Wandless	101 2 0
C. Martin*	91 17 3

Bricklayer, mason and joiner.

Messrs. Adamson,†

Slaters.	
J. Mascall	£31 5 0
W. Lancaster	27 0 0
C. Martin*	21 7 11
Plasterer.	
F. Welford	25 0 0
C. Martin*	25 0 0
Plumber.	
C. Raine*	35 0 0
Painter.	
J. Wrathall*	7 5 0
* Accepted. † Withdrawn.	

Chelmsford.—For the erection of a pair of villas. Mr. R. Mawhood, architect, 2, Market Road, Chelmsford:—

F. Johnson	£1,696
Choal & Son	1,650
Potter & Son	1,650
I. Gowers	1,637
F. Weight	1,592
W. Sannus	1,530
J. Rayner	1,498
Moss & Co.	1,411
E. West,* Chelmsford	1,390

* Accepted.

Coventry.—For the construction of about three miles of new tramways and the reconstruction of $\frac{3}{4}$ miles of tramways at Coventry, for the New General Traction Co., Ltd. Mr. I. E. Winslow, engineer, 30, Bishopsgate Street Within, London, E.C.:—

J. & W. S. Briscoe, Stockport	£86,794 1 4
Graham & Sons, Huddersfield	46,628 3 1
J. Ewart, Westminster	44,280 12 5
Dick, Kerr & Co., London, E.C.	41,847 13 1
W. Griffiths & Co., London, E.C.	40,937 19 10
H. Holloway & Co., Wolverhampton	38,686 17 10
Freeman, Hollingwood, Oldham	38,271 3 9
J. G. White & Co., London	37,656 11 3
Pegg & Bailey, Derby	37,408 16 7
G. Law, Kidderminster	36,747 7 11
Mollett, London, E.C.	36,276 1 0
Underwood, Dukinfield	36,068 7 5
R. W. Blackwell & Co.,* 59, City Road, E.C.	34,296 19 1

* Accepted.

Droylesden.—For street works proposed to be executed in Medlock Street and Hart Street, Droylesden, for the Urban District Council. Mr. Charles Hall, surveyor:—

Bates & Co., Droylesden	£2,881 0 0
W. H. Hurst, Droylesden	2,704 0 0
F. Mitchell & Sons, Manchester	2,644 6 2
Worthington, Manchester	2,349 17 8
J. Culshaw, Ashton-under-Lyne	2,313 16 2
Gosling & Stafford,* Hazel Grove, Manchester	2,279 10 2

* Accepted. [Surveyor's estimate, £2,571.]

Eton (Bucks).—For the erection of a new fire-brigade station, High Street, Eton, for the Urban District Council. Mr. C. W. Baker, architect, 24, Heythorpe Street, Wandsworth, S.W. Quantities by Mr. J. Simmonds, surveyor to the Council:—

G. Geay	£2,725 0 0
Hollis & Sons	2,698 0 0
T. J. Messom & Sons	2,691 0 0
H. D. Bowyer	2,685 0 0
Thompson & Beveridge	2,669 0 0
J. Fergusson & Co.	2,598 0 0
Butcher & Hendry	2,570 0 0
H. Burfoot	2,443 10 0
W. Watson,* Ascot	2,369 0 0
G. H. Gibson	2,348 0 0
W. Green & Sons	2,335 0 0
E. Chamberlain	2,320 0 0
H. Flint	2,269 0 0

* Accepted subject to sanction to loan by Local Government Board.

Hull.—For the erection of a Carnegie public library in West Park, Anlaby Road, for the Public Libraries Committee. Mr. Joseph H. Hirst, city architect:—

Evans & Buxton, Mersey Street	£2,798 18 8
J. H. Fenwick, Albert Avenue	2,660 0 0
Simpson & Sons, Woodcock Street	2,595 2 0
T. Beilby, St. George's Road	2,585 0 0
J. Carr, Cholmley Street	2,521 17 5
T. Goates, Brunswick Avenue	2,503 0 0
E. Good & Sons, Ltd., Main Street	2,495 18 7
H. Kaye, Linnaeus Street	2,415 0 0
J. R. Woods, Witham	2,410 17 0
F. Singleton, Witham	2,390 0 0
F. Southern, Wright Street	2,355 4 6
F. T. Arnott,* Walker Street	2,333 2 6

* Accepted. [All of Hull.]

London W.—For the erection of public baths at Fisher's Lane, for the Chiswick Urban District Council. Mr. John Barclay, surveyor:—

McCormick & Sons, London, N.	£17,743 0 0
Barnes, Chiswick	17,437 0 0
F. & E. Davey, Southend-on-Sea	16,757 0 0
Chessum & Sons, Bow	16,692 0 0
Foster Brothers, Norwood Junction	16,583 0 0
R. L. Tonge, Watford	16,500 0 0
W. J. Dickens, Ealing	16,430 0 0
T. Millman & Co., Chiswick	16,400 0 0
H. Willcox & Co., Wolverhampton	16,375 0 0
B. E. Nightingale, London	16,359 0 0
Leslie & Co., Ltd., Kensington	16,300 0 0
Spencer, Santo & Co., Ltd., Kensington	15,987 0 0
C. R. Gurr, Chiswick	15,975 0 0
W. Lawrence & Sons, Waltham Cross	15,974 0 0
A. Faulks, Loughborough	15,850 0 0
Cropley Brothers, Epsom	15,779 0 0
J. Ferguson & Co., London, E.C.	15,698 0 0
J. Renshaw, Putney	15,597 0 0
E. Wall, Tooting	15,475 16 0
Galbraith Brothers, Camberwell	15,403 0 0
Wisdom Brothers, Isleworth	15,200 0 0
J. Dorey & Co.,* Brentford	14,383 0 0

* Accepted.

(Continued on p. xix.)

THE "CALEDONIA" FANLIGHT OPENER SPECIAL.

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When writing to Advertisers please mention **The Builders' Journal.**

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Appointments Wanted.

The charge for Advertisements under this heading is 1s. 6d. per insertion not exceeding four lines, and 6d. per line afterward, prepaid. Three insertions may be had for the price of two. Advertisements must reach the Office not later than 5 o'clock on Monday.

ALL CLASSES OF POINTING Wanted, prices very moderate, any quantity, good references.—Box 258, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

ARCHITECT AND SURVEYOR'S ASSISTANT (24), Student R.I.B.A., desires RE-ENGAGEMENT. Quick and neat draughtsman. Accurate leveller and surveyor. Building construction instructor. First-class references.—Goff, Park Road, Lowestoft. 255

ARCHITECT & SURVEYOR'S ASSISTANT, 22, experienced and capable all duties, artistic draughtsman, see my Register No. 167, desires APPOINTMENT, view of Partnership, excellent prospects.—Box 291, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

ARCHITECT AND SURVEYOR'S HEAD ASSISTANT desires change; 12 years' experience. Quantities, specifications, designs, details, perspectives, surveying, &c.—Box 274, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

ARCHITECT AND SURVEYOR'S Junior ASSISTANT, age 22; drawings, details, surveying, &c., good references.—Box 246, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

ARCHITECT AND SURVEYOR'S Junior desires re-engagement. Good at planning, neat draughtsman, quantities, &c., good reference.—STRACHAN, 112, Kelmscott Road, S.W. 283

ARCHITECT & SURVEYOR'S Junior ASSISTANT seeks re-engagement. Experience in planning, details, designs from sketches, perspectives, quantities, levelling and surveying, neat draughtsman; Prob. R.I.B.A.; mod. salary.—Address, W. HELM, Victoria Road, Woolston, Hants. 276

ARCHITECT'S ASSISTANT desires engagement. Tracings, photo copies, and drawing. Evening work accepted.—G. QUINLAN, 19, Forthbridge Road, Clapham Common, S.W. 281

ARCHITECT'S ASSISTANT. Details. Thorough knowledge quantities and fair draughtsman. Five years' experience. Salary 30s.—Address ASSISTANT, Elizabeth Lodge, Crescent Road, South Woodford, Essex. 247

ARCHITECT'S ASSISTANT disengaged, well up in Board School design, specifications and quantities; temporary work not objected to.—Apply Box 245, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

ARCHITECT'S ASSISTANT, good experience, requires ENGAGEMENT; contract drawings, details, surveying assistance with quantities, &c.—Box 290, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

ARCHITECT'S ASSISTANT requires engagement; 15 years' experience in well-known London office. Moderate salary.—Box 287, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

ARCHITECT'S ASSISTANT, 4 years' articulated, desires situation as improver; salary no object.—G. S., c/o Thompson, 9, Lochrin Place, Edinburgh. 263

ARCHITECTS, BUILDERS, &c.—Able assistance by experienced Draughtsman and Surveyor.—Box 268, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

ARCHITECT'S, SURVEYOR'S or CIVIL ENGINEER'S ASSISTANT desires appointment, six years' experience in land and marine surveying boring operations, details, plans, levelling and drawings. Moderate salary.—F. PREVATT, 27, Grange Road, Canonbury, N. 248

ARCHITECT'S JUNIOR ASSISTANT (19), just finished articles in well-known F.R.I.B.A.'s office, desires engagement, excellent reference.—A. W., 14, Wilby Lane, Barnsley. 265

ARCHITECT'S JUNIOR ASSISTANT desires engagement, 3 years' London experience, well up in office routine; moderate salary.—A. C., 34, Great James Street, W.C. 273

AS CLERK OF WORKS, thoroughly practical in Brick, Stone, Sanitary matters, structural steel work, and concrete. Good references and testimonials.—Box 286, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

AS SURVEYOR'S ASSISTANT, practical knowledge of building and repairs, good draughtsman, preparation of plans of buildings, roads, sewers, &c. Levelling, supervision.—J. G., 24, Titchborne Street, Edgware Road, W. 264

BUILDER'S ASSISTANT (disengaged), 10 years' experience, prime costs, ledgers, accounts, general supervision and other office routine, excellent references, age 27.—P., 18, Kennington Park Rd., S.E. 242

BUILDER'S CLERK, aged 18½, 4 years experience; office routine and correspondence, can super and cube, and assist in measuring up, wages 22s. 6d.—Box 235, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

BUILDER'S CLERK, age 24, DESIRES CHANGE, 7 years' experience, well up in all branches various trades, also plans, quantities, measuring up, management, office routine, correspondence, &c. Excellent references. Abstainer.—Box 285, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

BUILDER'S CLERK (30) well up in book-keeping, time-sheets, and general routine. Early riser and abstainer. Thirteen years' experience.—A. J. K., Box 279, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

BUILDER & CONTRACTOR'S ASSISTANT seeks RE-ENGAGEMENT. Eighteen years experience, quantities, drawing, surveying, levelling, &c. Good references.—Address G., 71, Gertrude Road, West Bridgford, Nottingham. 288

CARPENTER, 40, Good Drawing, Measuring, Quantities, wants change. Long, good references. Abstainer. London.—Box 275, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

CLERK OF WORKS disengaged. Town or country. Experienced, practical, reliable. Well up in all branches. Plans, measurements, quantities, details. Good references.—P., 84, Warner Road, Camberwell. 296

DECORATING AND PAPERHANGING WANTED.—Good Work, any quantity and any distance.—R. T. ELEY, 49, Barrett's Grove, Stoke Newington, N. 254

DRAUGHTSMAN AND SURVEYOR (27), varied ex., good designer, working details, spec., take out quantities, experience in shop fitting, good surveyor and leveller, moderate s.—B., Waterworks, Malden, Essex. 241

ESTIMATING.—An experienced Builder's Estimator will be pleased to price Bills of Quantities for Builders, moderate charges.—Apply, T. G. P., Box, 232, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

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GENERAL FOREMAN disengaged. Town or Country. Thoroughly practical, energetic, reliable, and good manager of men. Just finished large contract. First-class Testimonials.—Address, W. R., Ivy Road, Cricklewood, N.W. 282

GENERAL or Working Foreman disengaged, Carpenter and Joiner by Trade; good manager of men. Good references from late employer.—W. B., 79, St. Albans Avenue, Bedford Park, S.W. 292

GRAINER AND WRITER to the Trade—J. FRAIL, 38, Coopersale Road, Clapton Park, N.E. 257

IRONMONGER (Builder's), disengaged, qualified for buying for large builder's office, drawing and photography, excellent refs.—J. T. G., 16, Piershill Place, Edinburgh. 266

JOINERS' FOREMAN and MACHINIST, 15 years with last employer; good references; reasons given for being out; country.—A. G. COOPER, Bridge House, Bocking Church Street, Braintree. 234

JOINER wants Job, young. Experience in machine shop. Town or country.—Apply G. W. S., Crabtree House, Lower Beeding, Horsham, Sussex. 238

JOINER—Young, seeks Employment to assist shop foreman. Thorough knowledge of the trade, neat draughtsman, certificated in building construction, good refs.—A. P. H., 12, Waterloo Villa, Harefield, Middlesex. 278

LETTER CUTTER and CARVER wants JOB, in London or suburbs. Good references. Could fill up time in office.—Apply J. DAY, 100, South Street, Bishop's Stortford. 293

MACHINIST (27), wants job, over and under saw bench, any planers, fourcutter; improver on spindle. Had charge small plant; town or country, gd.—MACHINIST, 28, Blackhorse Road, Walthamstow. 269

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Borough Green, Kent. A. J. H. POWELL, Surveyor.
March 9th, 1904.

PARISH OF LAMBETH.

ERECTION OF A WALL AT PRINCE'S ROAD WORKHOUSE.

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Tenders, which will be received only on the printed form, sealed and endorsed "Tenders for Wall at Prince's Road," must be delivered at the offices of the Guardians, Brook Street, Kennington Road, not later than TEN o'clock on WEDNESDAY, the 30th MARCH instant, and will be opened at the Board room at NOON on the same day, when all persons Tendering, or their authorised agents, must be in attendance.

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BANBURY,

February 27, 1904.

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I. F. B.

Builders' Journal,
March 9th.

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See p. xxii for the Employment Register.

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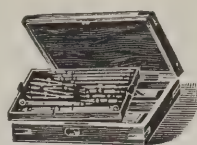
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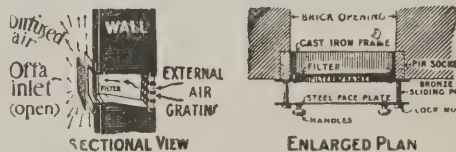
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Manchester Show Rooms:
37, Cross Street.
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96, Renfield Street.

TENDERS—cont. from p. xv.

Lowestoft.—For the erection of a new free library, for the Corporation. Mr. G. W. Leighton, architect, 6, Princes Street, Ipswich:—
 Grimwood & Sons .. £6,593
 Earle .. 6,527
 Cole .. 6,492
 Eisey .. 6,425
 Linzell .. 6,397
 Youngs & Sons .. 6,219
 Beckett .. 6,097
 Bedwell & Parker .. 6,090
 Hawes & Sons,* Norwich .. 6,000
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Northampton.—For alterations and additions to the County Buildings, Northampton. Mr. C. S. Morris, county surveyor:—
 H. Knight, Rushden .. £2,800 0 0
 A. Lewin & Son, Kettering .. 2,375 0 0
 C. & F. Henson, Kettering .. 2,325 0 0
 G. Henson, Wellingborough .. 2,241 0 0
 H. Martin .. 2,220 0 0
 E. Brown & Son, Wellingborough .. 2,195 10 0
 W. Beardmore .. 2,130 0 0
 R. Archer .. 2,019 0 0
 R. Cosford .. 1,993 0 0
 Hacksley Brothers,* Wellingborough .. 1,971 0 0
 * Accepted. [Rest of Northampton.]

Okehampton (Devon).—For the construction of a new main road at Water Lane, Hatherleigh, nearly four furlongs in length, together with the necessary bridges, culverts, drains and retaining walls, for the Rural District Council. Mr. S. Hooper, district surveyor, Biddicombe, Hatherleigh:—
 Meredith Brothers, Gloucester .. £3,000 0 0
 S. G. A. Petherick, Hatherleigh, Devon .. 1,659 0 0
 J. Brooking, Northlew, Devon .. 1,457 0 0
 J. Bolt, Market Street, Hatherleigh .. 1,351 10 0
 W. Furse & Sons, East Street, Okehampton .. 1,192 10 0

E. Harris, Clyst Hydon, Exeter .. £1,283 0 0
 R. Petherick,* High Street, Hatherleigh, Devon .. 1,250 0 0
 * Accepted subject to the approval of the Devon County Council.

Selston (Notts).—For sewerage and sewage-disposal works, for the parish of Selston, Nottinghamshire. Messrs. Sands & Walker & Maylen, joint engineers, Milton Chambers, Nottingham:—
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 G. Braithwaite, Leeds .. 25,975
 J. Jackson, Plaistow .. 25,784
 J. F. Price, Nottingham .. 25,777
 J. Hawley & Son, Ilkeston .. 24,994
 J. S. Dawson, Blackpool .. 24,446
 Barker Brothers, Cannock .. 24,332
 J. Hodson & Son, Nottingham .. 24,183
 H. Ashley, Mansfield .. 22,699
 F. W. Trimm, Dorking .. 22,635
 Johnson & Langley, Leicester .. 21,257
 G. M. Kerry & Co., Nottingham .. 21,200
 Cope & Raynor,* Nottingham .. 20,524
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Tilehurst (Berks).—For the erection of an infectious diseases hospital on the site acquired for the purpose and situate in Prospect Park, in the parish of Tilehurst, in the county of Berks, for the Reading Town Council, Messrs. Charles Smith & Son, architect, 164, Friar Street, Reading:—

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 E. C. Hughes .. 20,863 13 10
 Spear & King .. 20,735 3 0
 S. Roberts .. 20,612 12 2
 H. Godwin .. 20,582 16 10
 G. Pilgrim .. 20,579 0 0
 J. Norris & Son .. 20,425 0 0
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(Continued on p. xx.)

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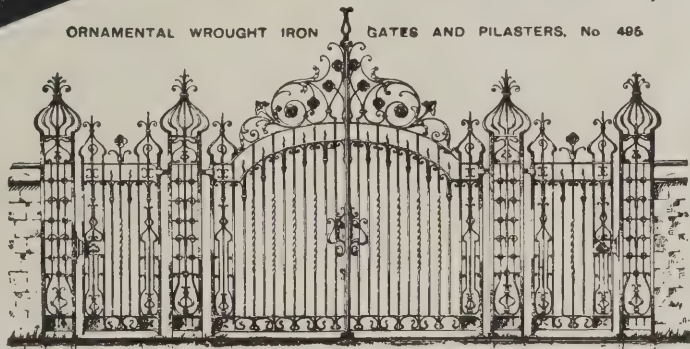
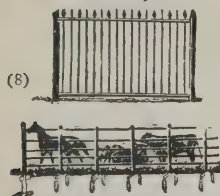
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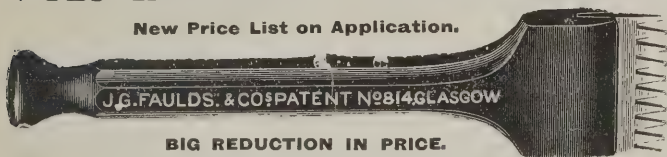
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Bankruptcies.

[Abbreviations: R.O.—receiving order; P.E.—public examination; C.C.—county court; O.R.—official receiver; Adj.—Adjudication.]

DURING THE WEEK ending March 18th twenty-one failures in the building and timber trades in England and Wales were gazetted.

H. & W. CORRIN, builders, Seaforth. Adj. March 11th. STEEL & STEEL, timber merchants, London. Liabilities £7,426; £6,026 unsecured; assets nil.

F. ELLIS, builder and contractor, Clown. R.O. March 7th.

E. A. LEE, builder and joiner, Trimdon Colliery. First meeting, O.R.'s, Sunderland, March 23rd, at 3.

J. E. KITTON, timber merchant, Barking. Adj. March 9th.

W. ROLES & SONS, builders, Romsey. R.O. March 10th.

BELL & MAHER, builders and contractors, Prescot. P.E., Liverpool C.C., March 31st, at 11.

W. POWELL, builder, St. Helens. P.E., Liverpool C.C., March 31st, at 11.

D. WILLIAMS, joiner and builder, Caerwys. R.O. March 11th.

J. ALLEN, builder, Pembroke Dock. P.E., Temperance Hall, Pembroke Dock, March 30th, at 12.

H. T. JONES, builder and innkeeper, Eaglescliffe, York. Gross liabilities £60,292; expected to rank £3,657.

P. H. MACK, builder and contractor, Dereham. Liabilities £3,670; expected to rank £3,270; assets £1,657; deficiency £1,613.

SHELDON & ELTON, LTD., coal contractors and builders' merchants, Birmingham. Liabilities £3,378; deficiency £1,220.

W. HOOPEL, builder, Cricklewood. First meeting, London Bankruptcy Court, March 28th, at 11. P.E., same, April 21st, at 11.30.

D. TURNER, timber merchant, Wednesbury. First meeting, O.R.'s, Wolverhampton, March 24th, at 11.30. P.E., Walsall C.C., April 14th, at 11.30.

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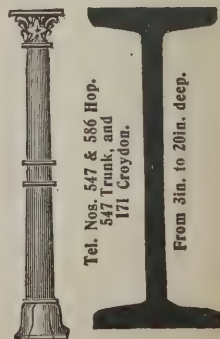
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March 30, 1904. Vol. 19, No. 477.

6, Great New Street, Fetter Lane, E.C.

Summary.

We draw special attention to the two illustrations on p. 153 of this issue showing the commencement of a six-storey warehouse at Manchester. This building is being erected under English supervision, and the illustrations which we shall publish week by week until the work is completed are intended to show what can be done in this country when there is not so much as an American nose around the corner.

The Manchester Corporation is reorganizing its "dangerous buildings" department. Under the new arrangement there will be six districts with six inspectors. (Page 153).

In the course of a paper on electricity-generating stations which he read before the R.I.B.A. on Monday, Mr. C. Stanley Peach said that in less than twenty years these had developed from small commonplace sheds to complex structures frequently of great size; upwards of 750 of these buildings had in about fifteen years been erected in the United Kingdom alone, and many more abroad. Central stations might be divided into three classes: (1) the power station—now coming into vogue, (2) the sub-station, and (3) direct supply stations (sub-divided into simple and composite). (Page 156.)

In the House of Commons on March 22nd Sir G. Bartley suggested that a shallow tramway should be made under the Mall from Charing Cross to Victoria, but Mr. Victor Cavendish said the suggestion came too late. (Page 152.)

The statue of Queen Elizabeth now over the doorway at St. Dunstan's, Fleet Street, originally stood on Ludgate, then newly erected. The latter was gutted in the Great Fire, but the statue remained uninjured, and on the final demolition of the gate was placed on old St. Dunstan's. (Page 148.)

The late Mr. Barrow Emanuel died worth £57,855. (Page 152.)

Mr. Frank W. Hoyt, editor of the "Stone Magazine," of New York, asserts that the public and the building trades in America do not regard with indifference or approval the sharp tricks by which a few concerns have used the machinery of trade-unionism (through unscrupulous walking delegates) to injure business rivals and defeat fair competition. Strong action has been taken to prevent further malpractices. (Page 157.)

This year the architectural exhibits at the Institute of Fine Arts, Glasgow, have a room to themselves instead of being crowded out on to the landing as they were last year. There are a few notable works and a number of average merit; on the whole the exhibits are more satisfactory than they have been for some years. Chief among them is Mr. James Miller's extension of the Central Station Hotel. (Page 151.)

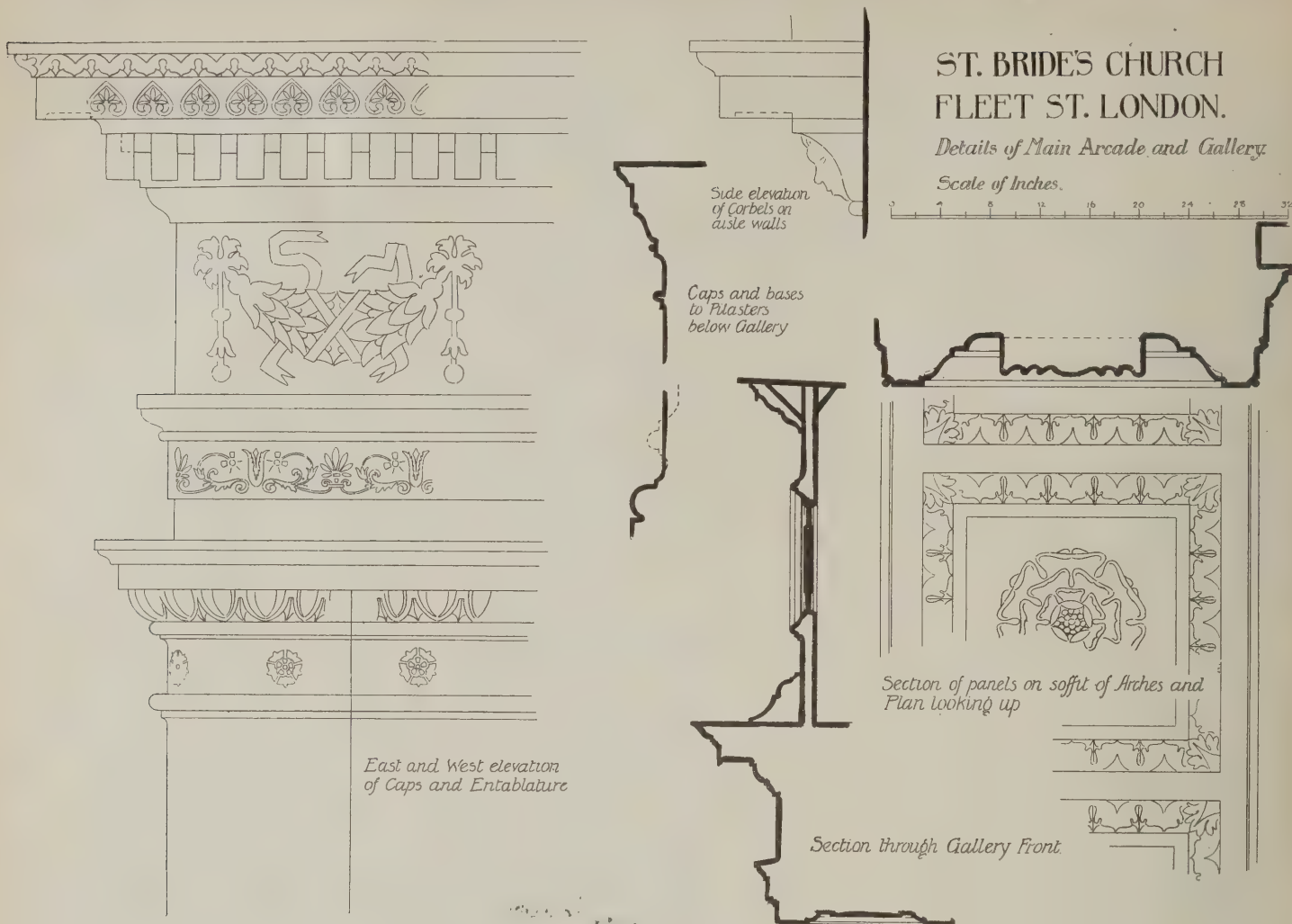
Monotonous Streets.

THE Coventry City Council succeeded in making itself ridiculous at its last meeting by referring back plans of houses approved by the General Works Committee on the ground that they had projecting oriel windows on the first floor. The worthy alderman who moved the amendment gave as the grounds of his objection that this would make the frontage project over the building line. He went on to say: "In Coventry, for hundreds of years past, there had been no end of ancient houses projecting over the streets, and the Council during the last hundred years had made every endeavour to have them set back and to widen the streets to a defined line. Their past efforts had succeeded in many cases in getting those overhanging buildings made straight and not to project over the streets. This proposition to build six houses with overhanging bay windows was a deliberate attempt to go backwards—to undo all they had done for a great many years. The extent of the projection proposed was 15in., and was in fact a deliberate attempt to lengthen the upstairs rooms by 15in. by pinching it out of the street space. In the Committee the argument was brought forward that the bay windows would make the street look much more picturesque. If that were so, the builder could easily accomplish the same result by putting the houses back 15in. and then allowing his bays to project to that extent." Another worthy suggested that "if they once admitted this sort of thing, where would it stop? Another builder would put up a three-storey house and make the third storey project over the second; the next might put up a four-storey house, and so on until they touched one another: then where would the sunshine be?" No wonder the members here laughed—it was enough to make the angels weep. A sensible individual pointed out that if tradesmen's lamps were allowed to overhang, why not oriels? This is only another case of the maladministration of building by-laws by local authorities. These ignorant councillors were unaware that the London County Council allows oriels to project 3ft. in order to discourage the deadly uniformity of the flat front—once prevalent—and little did they realize or care for the ugly and absurd effect suggested of recessing the front to allow for the projection. But this raises the question of street frontages. Of course a small projection of a few inches of one front beyond the other is impossible to deal with, and must look awkward because it is obviously so artificial and illogical; but if the frontage is broken back

several feet it allows of a possible pleasing treatment by corner windows or turrets. But there is something more than this, a treatment which is not adopted often enough, namely, the recessing of a building a good way back from the road, so as to give a courtyard with perhaps a welcome touch of green foliage and a break from the bustling activity of the street in front; allowing, moreover, a shaft of light to break across the street, giving a sense of airiness and distance, at the same time hygienic.

Municipal Re-housing.

SOME of Mr. W. E. Riley's admissions in the discussion on "Municipal Re-housing" at the Sanitary Institute on Saturday, if not surprising, were somewhat startling. He said that of the 5,719 persons displaced by the Great Boundary Street scheme of re-housing carried out by the London County Council only 11 out of a possible 1,500 were living on the new area. In the Falcon Court scheme about 40 of the old tenants had availed themselves of the new accommodation for 500 persons, while at Millbank only 25 displaced tenants took quarters, though in the Clare Market scheme and the Holborn-Strand improvement rooms were provided for 1,000 displaced persons, and the whole of the tenements in Drury Lane were occupied by the persons they were designed for. This is wholesale enough condemnation of the London County Council's schemes for housing the working classes. As it was pointed out at the meeting, it is obvious that persons who pay 5s. a week for rooms cannot pay 6s. 6d. to 8s. 6d. We have to credit Mr. Riley's regime with the better results in the Holborn-Strand scheme, and he seems to have done as well as any municipal body in densely-populated areas like the centre of London; but public authorities generally want to completely reform matters at once. It is no use giving the poor what they cannot afford and will not have. The reform must be gradual, and all that seems possible to do with the present generation is to offer them slightly better accommodation at the same cost, and to trust to their children growing better citizens and asking for better accommodation. The Rowton houses are rapidly solving one of the chief problems connected with the housing of the poor; and if the London County Council were to establish a separate department to erect dwellings itself, and give the management into the hands of one worthy man (the course which has made the Rowton houses a success), it is likely we should see no more gigantic failures such as their efforts have been up to the present.



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NOTES ON THE CITY CHURCHES.—V.

(Continued from p. 103, No. 473.)

By F. HERBERT MANSFORD.

Monuments.

REFERENCE has already been made to the chief monuments of St. Helen's, but it is necessary also to draw attention to the Perpendicular Gothic tomb in the north nave, to the series of Elizabethan and Jacobean wall tablets, and to the quite recent one erected by the Drapers' Company to the memory of Francis Bancroft, in place of his original and most cumbersome tomb.

There are two fine canopied altar tombs still remaining in All Hallows, Barking, of Perpendicular date, but scores of such monuments must have perished in the Great Fire.

St. Giles, Cripplegate, holds the grave of Milton—

"Three Poets in three distant Ages born,
Greece, Italy and England did adorn;
The First in Loftiness of Thought surpasses,
The Next in Majesty—in both the Last;
The force of Nature could no further go:
To make a Third she joined the former Two."*

Visitors may occasionally feel that the monument represents the site of the interment, but a small paving stone near the chancel rail is clearly inscribed "Near this spot was buried John Milton, author of Paradise Lost. Born 1608, died 1674." There are also in the church the graves and monuments of Speed, the antiquary; John Foxe, martyr, and Martin Frobisher, navigator. As however these are all wall tablets, the church

has not the rich effect produced by the altar tombs at St. Helen's.

St. Bartholomew the Great contains the canopied tomb of its founder, Rahere, still beautiful, but shorn of a third its original length. The monument generally is of fifteenth-century workmanship, but a few antiquarians believe the figure of the royal jester to be of earlier date. Some slight basis for the suggestion is afforded by the fact that the recumbent figure is of stone, while that of the angel at the foot is formed in composition. Facing this tomb was formerly the Renaissance monument of Sir Walter Mildmay, an Elizabethan statesman; this is now relegated to the darkness of the south aisle, where its heraldic emblazonments are but dimly discernible. Here too is the unmarked grave of Walden, sometime Archbishop of Canterbury, and later Bishop of London. This unique experience came about through the return of Arundel, his banished predecessor in the primacy, on the accession of Henry IV. After Walden's complete retirement, Arundel generously obtained for him the bishopric of London. Leaving by the churchyard path we see the bases of the old nave piers—it is interesting to remember that Queen Mary's friars commenced the reconstruction of the nave.

In St. Andrew Undershaft is a rare monument to a rare man—the terra-cotta memorial to John Stow (see p. 150). We can scarcely tell what knowledge of mediæval London we should be without if Stow had stuck to his thimble. The monument dates from the time of James I., saving the goose-quill, which is renewed from time to time.

St. Olave's, Hart Street, contains a monument to Pepys (designed by Sir A. Blomfield); St. Bride's, memorial slabs of

Samuel Richardson and Alderman Waithman, M.P.; and St. Magnus a monument to Miles Coverdale. There are several ancient brasses, the finest of which are in All Hallows, Barking, and St. Helen's.

The churches contain many other tombs of distinguished persons, yet more than one interesting grave lies unheeded and unmarked. Sir John Vanbrugh, architect and dramatist, is buried in St. Stephen's, Walbrook, but no one seems to know the exact spot. Sir Richard Whittington and Inigo Jones were respectively buried in the mediæval churches of St. Michael, College Hill, and St. Benet, Paul's Wharf, but no memorial recalls the fact, save a grotesque stained window in the former church. Richard Baxter and Judge Jeffreys are impartially neglected at Christ Church, Newgate Street, and St. Mary, Aldermanbury.

Queen Elizabeth was honoured by at least sixteen memorials in the City alone. The epitaphs usually ran in this style—

"Britain's Blessing, England's splendor,
Religion's Nurse, Faith's Defender."*

Most of these perished in 1666, and none, I believe, remain to this day. But over the east porch of St. Dunstan's, Fleet Street, is a statue of the great queen, a contemporary one, having been sculptured for Ludgate, newly erected in her reign. The gate was gutted in the Great Fire, but the figure remained uninjured, and, on the final demolition of the gate, was placed on old St. Dunstan's Church, whence it gazed down Fleet Street. There are two or three good Jacobean memorials within the present church, and the heads of Tyndale and Dean

* Inscription upon tablet on exterior of St. Mary-le-Bow Church, removed thither from All Hallows, Bread Street, upon its demolition. Milton was baptised at the latter church.

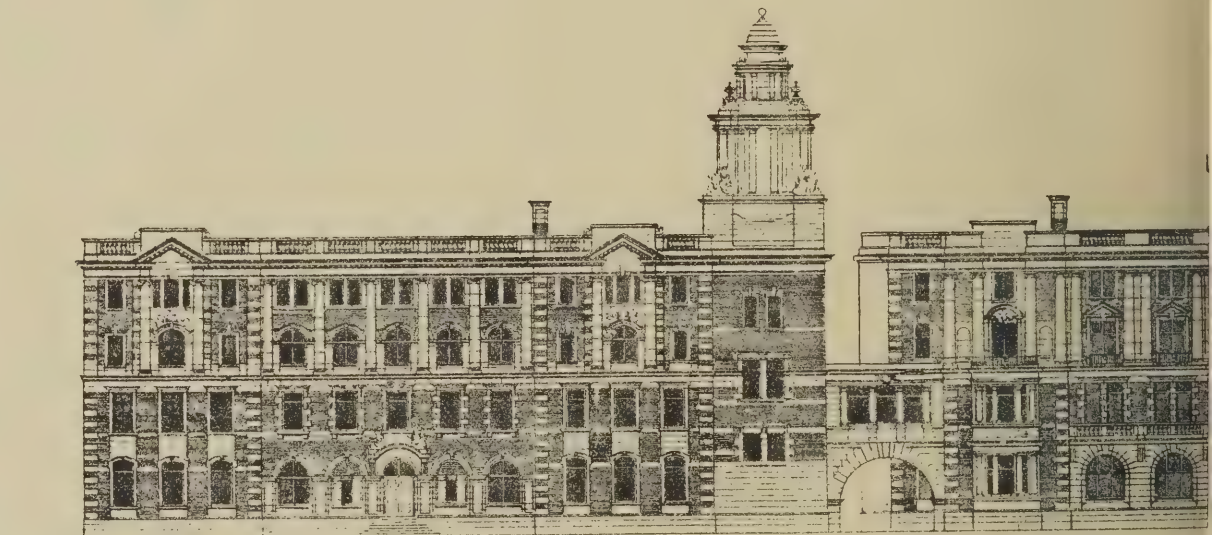
* In St. Olave's, Old Jewry, was a recumbent effigy of the queen beneath a canopy supported upon Corinthian columns.

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Donne are carved as corbels upon the south door.

There is a beautiful Jacobean monument in the north aisle of St. Sepulchre's Church. It is to an officer of St. Bartholomew's Hospital. His bust is niched side by side with that of his wife. The lady's is particularly attractive, by reason of the realism of her unaffected simplicity and sweetness of expression.

Stained Glass.

The evolution of the revived art of stained glass manufacture is epitomized in the windows of the City churches. In the north gallery of St. Andrew, Holborn, we have a window as old as the church, and one presumably inserted with Wren's approval. It consists of little more than an elaborate but coarse emblazonment of the royal arms, and is dated 1687. In the chancel window (by Price) of the same church, in the wheel window of St. Catherine Cree, and in the portraits of Edward VI. and four succeeding sovereigns at St. Andrew Undershaft, we have glass of early eighteenth-century date. The

unique oval window in the chancel of St. Giles, Cripplegate, was inserted towards the end of the century; the glass is painted entirely in yellow tones, and has cherubs and a "glory" for its subject. Of this period too is the east window in St. Botolph's, Aldersgate, with its landscape background.

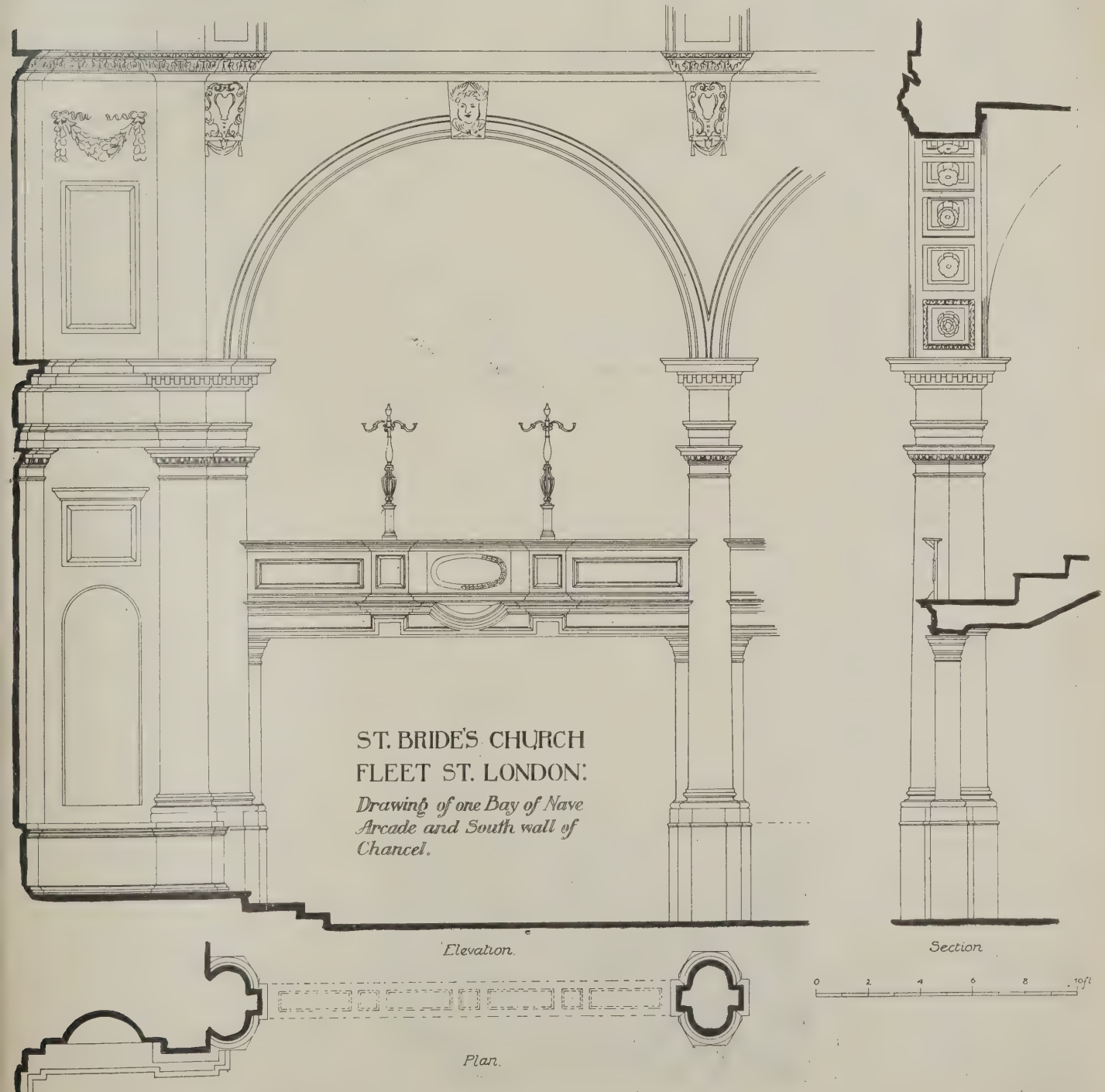
Early in the nineteenth century several very heavily coloured windows were inserted, of which the "Descent from the Cross," in St. Stephen's, Coleman Street, is a surviving example. A somewhat similar one in St. Bride's (by Muss) was removed about ten years since. The influence of the Gothic Revival is first observable in the chancel windows of both St. Dunstan's-in-the-West (by Willement) and East (by Backler); yellow is again the predominant colour, leaded lines are still absent, and the windows consist of a number of equal-sized panes, but the treatment is entirely different. German influence is traceable at the east end of the north aisle of the last-named church, while the window in the south aisle purports to be a copy of the "Adoration of the Magi," by Paul

Veronese; the picture is spread awkwardly over three lights and canopied with Gothic traceries!

Many windows represent the progress of the art during the middle of the century, some poor in the extreme, as at St. Giles' and St. Helen's, others eminently successful, as at St. Botolph's, Bishopsgate. St. James, Garlickhithe, St. Michael's (by Clayton & Bell) and St. Peter's, Cornhill (by Gibbs), and All Hallows, Lombard Street (by Gibbs) contain harmonious series of windows—reference has already been made in an earlier article to those of St. Lawrence Jewry.

In 1877 a glorious series of mediæval character was completed by Messrs. Clayton & Bell in St. Mary Aldermay, while St. Botolph, Aldersgate, contains a series of frankly modern glass pictures. Some of the most decorative windows are the least ambitious, such as those which dignify the interiors of St. Martin's, Ludgate, St. Mary Abchurch and St. Andrew by the Wardrobe.

The chancel windows of St. Helen's, Bishopsgate (by Heaton & Butler), and All



Hallows, Barking (by Clayton & Bell), may be cited as excellent examples of the revived art, but they lack a certain modern character which is traceable in the three churches last mentioned.

Pictures.

The churches contain some fairly good paintings, mostly originally executed as altar-pieces but now less frequently hung as such. Among them may be cited "The Martyrdom of St. Stephen," by Benjamin West (at St. Stephen's, Walbrook), "Mary Magdalen Anointing the Feet of Christ," by Hilton (1820, at St. Michael, Paternoster Royal), "The Ascension," by Geddes (1815, at St. James, Garlickhithe), and one of Ministering Angels by Carlo Maratti (1625-1713). This latter is at St. Margaret Pattens, where has also been placed a Della Robbia roundel and some other paintings.

Fittings.

The Wrennian altar-pieces were invariably of oak, richly carved, the finest specimens being those of St. Mary Abchurch (previously described), St. Magnus, St. Vedast and All Hallows, Lombard Street. These screens were generally framed with Corinthian pilasters, surmounted by pediments and adorned with flaming urns, candlesticks and festoons of flowers. Two central panels were occupied by the Decalogue and side ones often by paintings of Moses and Aaron. These have in many cases been altered to suit more advanced ritual.

The finest organ-cases are probably those of St. Lawrence Jewry, Christ Church, and St. Magnus. As far as the present writer can ascertain, there seems no instance where Wren placed the organ in any position other than in a west gallery; many organs have been shifted more than once, and with the increase of surplised choirs has come a tendency to move the organ to the east end of the church. In some cases the change destroys the balanced symmetry of the church, and displays to the congregation a side of the organ case never designed to be conspicuous. At St. Michael, Paternoster Royal, this is very apparent and aggravated by the fact that two windows are now practically blocked up.

The pulpits of St. Margaret, Lothbury, All Hallows, Barking, St. Clement, Eastcheap, St. Mary Abchurch, St. Mary-at-Hill and St. Mildred, Bread Street, are specially noteworthy, while that of St. Albans, Wood Street, although shorn of its sounding-board, still retains its old hour-glass. The oak lectern of St. Michael, Paternoster Royal, is unusually fine, and is supported by a figure of Charity bearing a child, while two others cling to her skirts, the group standing upon the grotesque head and shoulders of a man, probably representing Malice. Lecterns and litany stools in some other churches have been ingeniously constructed out of various old carvings and woodwork.

Space does not allow of more than reference to the beautiful fonts, bread-shelves, sword-rests, badges and beadle staves. Wrought-iron hat-racks occur in several churches, notably All Hallows, Barking, and St. James, Garlickhithe; these were generally affixed to the wall or columns near the Corporation pew, possibly for the special convenience of cocked hats. Very fine brass candelabra still remain at St. Mildred, Bread Street, St. Michael, Paternoster Royal, and in other churches.

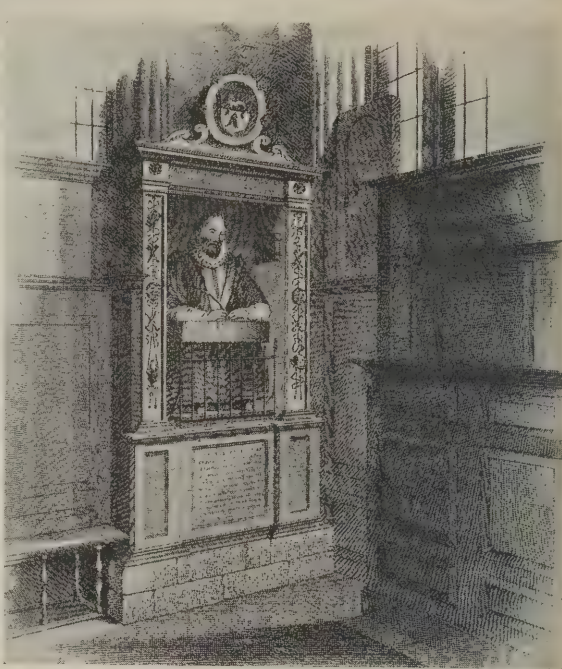
The treasures of the churches often overflow into the lobbies

and vestries. In the porch of St. Michael, Paternoster Royal, are statues of Moses and Aaron, which formerly stood on either side of the altar at All Hallows the Great. These stone figures narrowly escaped removal before the demolition of that church, as a former rector feared they promoted idolatry and gave orders for their destruction!

In a lobby at St. Mary-at-Hill is a mutilated relief of the Day of Judgment, similar to that over the churchyard gateways at St. Stephen's, Coleman Street, and St. Olave's, Hart Street. Under the tower of All Hallows, Lombard Street, is the massive gateway in iron and oak, with carved floral relief, which originally closed the Lombard Street approach. In the lobby of St. Botolph, Aldersgate, is a mahogany communion table of the Sheraton period, 7ft. long by 3ft. 10in. wide, and curved at the back to fit into the apse from which it was removed at a time of restoration.

In the beautiful vestry of St. Lawrence Jewry is an old painting of the "Martyrdom of St. Lawrence," and the ceiling represents Sir James Thornhill's idea of the saint's reception into heaven. The vestry at St. Olave's, Hart Street, is remarkable for the boldly modelled figure of an angel which occupies the centre of the ceiling. In the vestry of St. Mary-le-Bow is a carefully constructed wooden model showing the steeple with an arcaded screen-wall on either side. In the Middle Ages the sovereigns had been accustomed to view the Lord Mayor's procession from a gallery on the north side of the church; and it seems to have been Wren's idea to perpetrate this by a lofty loggia of two bays about 40ft. in height. Such a feature would have been most effective on a south elevation, but less valuable on this the shady side of the street.

A large wooden model of the church is also preserved in the vestry of St. Dunstan's-in-the-East. The date of its construction is not known, but it was probably completed before the church, for it shows square-headed single-light windows at the east end of the aisle and no pinnacles to the buttresses, in



STOWE'S MONUMENT IN ST. ANDREW UNDERSHAFT.

both respects differing from the executed work. It has been stated to represent that nave of Wren's which was destroyed in 1816, but this cannot be. Wren's nave, although Gothic without, had a Tuscan arcade with cartouched keystones, circular clearstory windows and a flat ceiling, whereas the model has none of these features. It is somewhat surprising that Wren's nave had to be pulled down and rebuilt, but he probably had made too much use of the walls of the ruined churches.

(To be concluded.)

Bricks and Mortar.

Aphorism for the Week.

He is the greatest artist who has embodied, in the sum of his works, the greatest number of the greatest ideas.—RUSKIN.

Our Plates. THE great hall at Westminster shown in the design of Mr. John P. Seddon and Mr. Edward B. Lamb is intended to contain monuments of high art to eminent men and women in all parts of the British Empire. Its connection with the Abbey and the disposition of its parts can be seen from the plan on page 152 and the perspective.—Particulars of the selected design for the rebuilding of the Royal Infirmary at Manchester, of which Mr. Edwin T. Hall, F.R.I.B.A., of London, and Mr. John Brooke, of Manchester, are the joint architects, were given on p. 125 of our issue for March 16th. The scheme is estimated to cost £324,000. The designs are now on exhibition in the banquetting room at the Manchester Town Hall. The other competitors are:—Henman & Cooper, Birmingham; A. Hessel Tiltman, London; Young & Hall, London; Thomas Worthington & Son, Manchester; H. Percy Adams, London; Heathcote & Sons, Manchester; Campbell Douglas and A. N. Paterson, Glasgow; J. Thomson and R. D. Sandilands, Glasgow; John W. Simpson, London; Waddington, Son & Dunkerley, Manchester; and W. Cecil Hardisty, Manchester.

Guildford's Ancient Crypt.

MR. THACKERAY TURNER, secretary of the Society for the Protection of Ancient Buildings, writes: "So many people are at present being interested by hearing about the wonderful crypt under the Savings Bank



ST. DUNSTAN'S, FLEET STREET (1812).

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Supplement to
THE BUILDERS' JOURNAL AND ARCHITECTURAL RECORD
Wednesday, March 30th, 1904.



PROPOSED HALL FOR IMPERIAL MONUMENTS AT WESTMINSTER.



P. SEDDON, F.R.I.B.A., AND EDWARD B. LAMB, JOINT ARCHITECTS

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in the High Street at Guildford that perhaps a few words on the subject may not be considered by you to be out of place. It is a building of exceptional interest, early fourteenth century in date, and without doubt originally forming the under-croft of a merchant's town house. It is entirely vaulted with somewhat massive ribs supported by two columns, thus dividing the vaulting into six compartments. There are no wall ribs, and the vaulting springs from large and finely carved corbels, in all cases but one consisting of the head and shoulders of the human figure. We may take it for granted that it could have been used for no other purpose than stores, from the fact that it is, and always was, approached from the High Street by a flight of steps leading down into it, and also from the fact that it only has one small window (now blocked) giving light from the High Street. The suggestion that it was used for religious purposes can, I think, gain no support."

INSTITUTE OF FINE ARTS, GLASGOW.

The Architectural Exhibits.

THIS year the Institute has changed its place of abode, and now occupies the old Corporation Galleries rendered vacant by the removal of the city's works of art to the new galleries at Kelvingrove. It must be admitted that the change is for the better. The staircase to the upper galleries is not so fine as in the old rooms—one of Mr. J. J. Burnet's early works—but there is more wall space; the former, no doubt, adds to the architectural effect, but the latter was an essential. The result is that this year the architectural exhibits have a room to themselves instead of being crowded out on to the stair landing as they were last year.

The exhibits this year consist of a few notable works and a number which can only be said to be of average merit. Chief among the former is Mr. James Miller's extension of the Central Station Hotel, an enlargement which will make this one of the biggest stations in the kingdom. The pen-and-ink drawing shows a view of the Hope Street façade; but, whether the architect has been hampered by the existing building or for some other reason, we must confess that we think he has not been so successful here as in his other façade—that to Union Street. The same architect also shows a number of most interesting photographs of a Perthshire house.

Mr. John A. Campbell shows a photograph of a fine large block of offices. Architecturally this block is a distinct advance on most of our street fronts and is an acquisition to the city's architecture. Mr. Campbell is also represented by a pencil perspective of a building for the Edinburgh Life Assurance Co. The design is bold and massive as befits a city front.

The perspective (283) of "Business Premises" by Messrs. Burnet, Boston & Carruthers is far from satisfactory. It is too evidently influenced by the work of the last-named architect. A much superior drawing is their "Residence at Pollokshields," a house with a corner tower.

Mr. J. James Burnet shows a very complete set of photographs of his "Elder Library, Govan," including the plan. The building is low and massive, and the architect has achieved a very good effect from his use of a flatly-curved portico. Some of the detail above the cornice might be questioned, but, with that exception, the building is certainly a decided acquisition to the architecture of the southern bank of the Clyde.

Messrs. Salmon, Son & Gillespie have illustrated their recent work very thoroughly. Exhibits numbered 311 and 359 are delightful

records of thoughtful design. No. 328 is a pen-and-ink drawing by Mr. Gillespie of a competitive design for Hamilton Municipal Offices and Library—one of the few good results of an unsatisfactory competition.

Mr. P. Macgregor Chalmers is represented by a church in the Norman style, which he has employed of late years to such good purpose, and by a street front—a warehouse block eight storeys in height, of simple construction, with a corner tower.

Mr. H. E. Clifford shows a good example of domestic work and a church (285) with a tower in the modern Perpendicular style.

Messrs. Watson & Salmon are represented by a church (295) in a similar style, with a belfry and side porch, and by a pleasing design for a house at Skelmorlie (329).

The new premises for Annan the photographer by Messrs. Honeyman, Keppie & Macintosh are not very pleasing, being too reminiscent of one of their late designs, especially in the use of the figure sculpture. Another exhibit in the style usually associated with the last-named partner is shown (309)—a house at Helensburgh which for barn-like ugliness it would be difficult to equal.

The work of Mr. Alexander Cullen (335) is almost as unsatisfactory, though from a different cause. The style is heavy Classic, with useless features introduced. Another exhibit by this architect is Dundyvan Church, Coatbridge (280), a pleasing design with a Scotch crowned tower, well-drawn, with the exception of the roof, which has more waves than the Euxine.

A very good design, boldly drawn, is (347)

Wishaw Academy, by J. & J. Forrest Steel. Mr. G. Paterson is also represented by a fine drawing of a Scotch baronial house (307), Fortissat, Shotts.

Design No. 297, a town hall and municipal chambers, by Messrs. Campbell Douglas & A. N. Paterson, is a very satisfactory piece of work well drawn. Messrs. Thomson & Sandilands show two very important exhibits, one a very large re-construction, warehouses in Nelson Street (304), which we hope will look as well when executed as they do on paper; and (312) a bird's-eye view of Stobhill General Hospital.

Mr. A. M. Gardner shows a design for a Royal Memorial Chapel (298), illustrated some time ago in this Journal.

Mr. William B. Whitie is responsible for a district library, a low Classic building of pleasing proportions, and a domestic piece (291). Mr. John B. Wilson shows a good drawing of a Late Gothic church with tower (327) which we have seen elsewhere. He also exhibits drawings of the entrance porch, and an interior of Trinity W.F. Church, Ayr; the latter has a rather bald chancel.

Design No. 322, by Messrs. Walker & Ramsay, for a public library, is striking, but too new in its details. The same criticism applies with added force to No. 354, Business Premises, East Howard Street, by Messrs. Beattie & Morton, a decidedly *outré* design.

On the whole, however, the exhibits this year are more satisfactory than they have been for some years, and the consideration shown to them give promise of better things in the future.



LOWER STAGE OF TOWER, BOW CHURCH, CHEAPSIDE, E.C.

Wren's design for a loggia comprised (with its eastern return elevation) three arches ranging with the rusticated enclosing arch of this doorway, separated from each other by pilasters 35ft. high, bearing an entablature and parapet. The depth of the loggia would have been equal to that of the tower, its total height about 55ft., so that it would have formed a portico of great dignity.

IN PARLIAMENT.

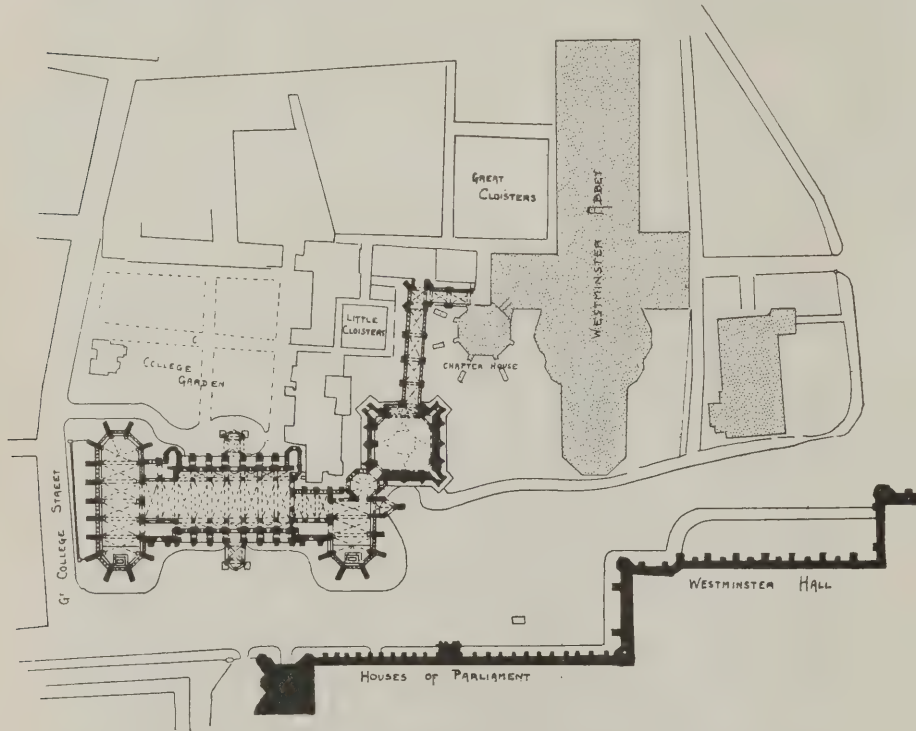
(By our Press Gallery Representative.)

GENERAL approbation was again showered upon the Mall extension scheme when the Metropolitan Improvements (Funds) Bill came up for second reading in the House of Commons on Tuesday, March 22nd. The only novelty in the debate was a suggestion made by Sir G. Bartley that a shallow tramway should be laid under the Mall from Charing Cross to Victoria Station, with the object of diverting a considerable amount of traffic from Piccadilly and Victoria Street. Mr. Victor Cavendish regretted that the suggestion had been made too late. At the same time he asked that the Bill should be allowed to pass soon, so that the work of the extension might be pushed on in an economical manner.

Mr. Disraeli interrogated the Home Secretary as to the extent of damage done by the recent fire at His Majesty's Female Convict Prison, at Aylesbury, the cost of rebuilding and the date of commencing the work.

the Forth has occasioned many appeals in Parliament from the Scotch representatives to safeguard amenities, to consider the advisability of adapting the garden city idea to the new town, and to do various other things, for all of which appeals careful consideration has been promised by the Admiralty.

Mr. Bryce asked the President of the Board of Trade the other day whether he was aware that it was proposed to construct a railway from Dunfermline to Kincardine which would pass along the foreshore of the Firth of Forth in the vicinity of Culross, and which would seriously injure the amenities of the neighbourhood; and whether, having regard to the facts that, since the construction of such a line was authorized by Parliament, it had been decided to form a naval base at St. Margaret's Hope, which might be expected to increase largely the population of the district, and that a large sum of money had recently been devoted by Mr. Andrew Carnegie to the enhancement of the pleasantness of Dunfermline and its



PLAN OF PROPOSED IMPERIAL MONUMENTS HALL AT WESTMINSTER.
JOHN P. SEDDON AND EDWARD B. LAMB, JOINT ARCHITECTS.

The President of the Local Government Board (Mr. Long) replied to the question. He said the fire destroyed the interior of the building, which contained the administrative offices, the chapel, the officers' infirmary and stores, and the roof of the central hall of the prison from which the wings containing the cells radiate. The reinstatement was estimated to cost about £5,000. The reconstruction of the roof of the central hall was, as a matter of urgency, being taken in hand at once, and plans were being prepared for the remainder of the work.

When the Navy estimates were under consideration, Mr. Spear, the member for Tavistock, raised a slight protest against Norwegian granite being employed in building the Government docks at Devonport. He especially urged the merits of Dartmoor granite, claiming that it was one of the best granites in the world.

The building of a naval base at Rosyth has given rise to considerable apprehension among the good people of Fifeshire. There are many old-world nooks on the fringes of the county which they regard with jealous care, and the proposal to plant down a busy town on a beautiful part of the coast-line of

environs, the Board would exercise the power reserved to the Crown by section 9 of the North British Railway (General Powers) Act, 1898, and induce the railway company to adopt a slightly different route which would be less harmful to the beauty of the coast.

Mr. Gerald Balfour's reply was: "My attention was called to this matter last December by the National Trust for Places of Historic Interest or Natural Beauty, but as the works had been authorized by Act of Parliament I was obliged to inform the council that the Department regretted they were unable to assist them. The Board are advised that the section referred to would not authorize them either to veto the scheme or to require the railway company to adopt a route outside the limits of deviation as fixed by the Act. These limits for the greater part of the distance do not extend on the land side above high-water mark. I have drawn the attention of the railway company to the right hon. gentleman's question."

According to the Army accounts submitted to Parliament, the War Department brickworks at Connellmore, Ireland, during the

past year delivered on site at Curragh and Newbridge 3,874,241 bricks, comprising common facing and special moulded. The total cost was £11,514.

Obituary.

Mr. C. J. Galloway, of the well-known engineering firm, of Manchester, died recently.

Mr. E. Burns, builder, of Liverpool, died on March 18th at the age of sixty-seven years.

The late Mr. Barrow Emanuel, of the firm of Davis & Emanuel, architects, Finsbury Circus, who died on February 14th, left estate of the gross value of £57,855, with nett personality £57,239.

Mr. David Hughes, J.P., builder, of Liverpool, died recently at the age of eighty-three years. He was the principal of the firm of Messrs. D. & L. Hughes, of Fenwick Street, Liverpool.

Mr. John Bruce, of Messrs. John Bruce & Sons, of Kelso, died recently at the age of seventy-three years. Deceased was a native of Sprouston, and started business in 1870. Of late years his firm was entrusted with many important contracts.

Mr. Charles William Rawlings, aged 53 years, living at Clapham Common, and the manager of the saw mills of Mr. Nash, builder and timber merchant, of 239, High Street, and 15, Earl's Court Road, Kensington, was recently found dead in his office, from heart failure.

Mr. Robert Bishop, a well-known Windsor builder, who recently failed in business, was found dead in a house in Tichborne Street, Paddington, last week. He had not put in an appearance for his public examination in bankruptcy, and a warrant had been issued for his arrest. At the time of his bankruptcy one of his solicitors, Mr. F. C. Leyton, disappeared from Windsor and has never been heard of since.

Mr. Benjamin Hitchcock Nunn, architect, of Brighton, died last Saturday week at the age of eighty-five years. He was a native of Homerton, where his father carried on business as a builder, the deceased remaining in his employ until 1845, when he went to Brighton and entered the office of Mr. John Fabian, at No. 12, Western Street, as measuring clerk. He remained twenty years in the service of Mr. Fabian, then one of the leading builders in the town. In 1865 Mr. Nunn was elected surveyor to the Brunswick Square Commissioners (afterwards "Hove Commissioners"), and, at the same time, commenced a private practice as architect and surveyor. Mr. Nunn executed the original drawings for the Brighton Workhouse, in which work he was associated with the late Mr. George Maynard, then surveyor to the Guardians. After Mr. Maynard's decease he designed and carried out the new casual wards and two new infirmary pavilions. The last public work upon which he was engaged was the new Board room and offices in Prince's Street, for the Guardians. In this work, completed at the close of the year 1894, Mr. Nunn was assisted by Mr. Simeon Hunt, who became his partner in 1891 and now continues the business alone, Mr. Nunn having retired in 1895. He carried out the Brighton Grammar School, several additions to the Brighton Race Stand, infirmary, board-room and offices for the Steyning Guardians, Cannon Street Mission Hall, Elder Street schools and St. Luke's Sunday Schools, Exeter Street, all of Brighton; and many commercial buildings. Mr. Nunn also acted as engineer for the main drainage scheme of Hurstpierpoint. It was, however, as a quantity surveyor that he was perhaps best known professionally.

Builders' Notes.

The Simplex Steel Conduit Co., Ltd., of Westinghouse Building, Norfolk Street, Strand, W.C., send us an embossed trademark show-card which has been prepared in response to enquiries from the trade. Any reader can obtain a copy free of charge by making application to the company.

The Columbian Fireproofing Co., Ltd., of 37, King William Street, E.C., have been given the contract for steelwork and concrete floors at the new warehouses in Scrutton Street to be erected by Messrs. Lawrance & Son, and also the entire steelwork for buildings in Earl Street for Messrs. Sheffield Brothers.

The Extensions to the Hospital for the City of Bristol at Ham Green are being warmed and ventilated by means of Shorland's double-fronted patent Manchester stoves with descending smoke flues, supplied by Messrs. E. H. Shorland and Brother, of Manchester, those previously supplied having proved very satisfactory.

Mr. C. H. Barnsley, who has been elected president of the Institute of Builders, has been, since the retirement of his uncle, Mr. Thomas Barnsley, the senior partner in the old-established firm of John Barnsley & Sons, of Birmingham, which was founded by his grandfather. Last year Mr. Barnsley was president of the Midland Federation of Builders. He is also a past-president of the Birmingham Master-Builders' Association and an auditor of the National Federation of Master-Builders.

The King's Sanatorium.—The work in connection with the erection of the King's Sanatorium at Midhurst, Sussex, has progressed favourably during the fine weather recently experienced. During the winter the contractors for the foundations (Messrs. Longley & Co., of Crawley) have had great difficulties to contend with on account of the rain, work during some weeks having been impossible for more than a few hours. It is expected that the foundations will be complete and ready for the superstructure well within the stipulated time. About a hundred men are now engaged on the job.

A Deep Well.—The Gainsborough water-supply scheme, which has occupied attention for twenty years, has just been completed. It involved boring to a depth of 1,515 ft. The boring is the largest sunk for water-works purposes in this kingdom, if not in the world. Messrs. E. Timmins & Sons, Ltd., of Runcorn, were the contractors. Pumping engines have been provided capable of dealing with 60,000 gals. per hour, and although up to the present the maximum yield has been only 32,000 gals., there is reason to believe that as time goes on the fissures in the sandstone will open out and a still further increase will be secured.

The Norwich Master-Builders' Association held its annual dinner on March 23rd, Mr. James S. Smith being in the chair and Mr. W. G. Crotch acting as vice-chairman. The chairman in reply to a toast said the membership of their Association represented the payment of £100,000 in wages a year. In connection with the Association was an accident insurance society, and already they had dealt with about ninety-two claims, some slight and some serious. They had managed to treat the accident association as a going concern. There had also been started recently another branch of business, a fidelity guarantee society, whereby they could guarantee any employee who might want references as to a situation. In addition, they had formed a builders' contract guarantee, which should commend itself to builders, because very often they were asked to sign a contract and find a bond. In such



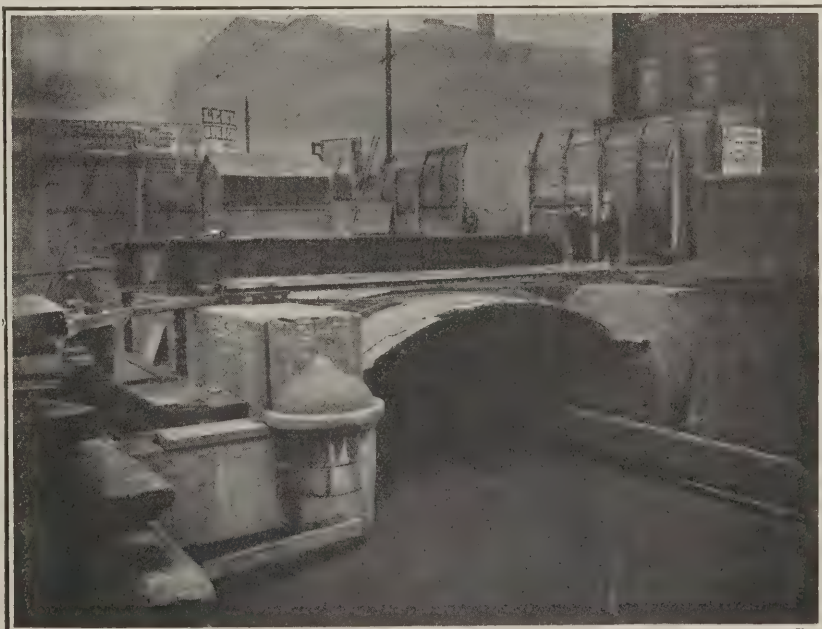
HOYLE'S WAREHOUSE, MANCHESTER: FEBRUARY 27TH.

cases the Association was willing to accept a guarantee for any builder who might accept a contract. The toast of the "Architects and Surveyors" was acknowledged by Mr. E. T. Boardman and Mr. A. E. Collins, the city engineer.

Dangerous Buildings in Manchester.—The Manchester Corporation is reorganizing the department for the inspection of buildings. Hitherto the city has been divided into three districts, with an inspector of buildings for each, a chief inspector of buildings over the three, and one inspector of dangerous buildings for the whole city. The fact that only one inspector had the duty of dealing with dangerous structures caused some comment recently. Under the new arrangement there will be six districts with six inspectors, and each inspector will have authority to act with regard to dangerous buildings as well as performing his ordinary duties. The chief inspector will have charge of a central division, as well as a general supervision of the others. This will entail the appointment of one additional inspector.

A MANCHESTER WAREHOUSE.

WE publish this week the first two photographs of a warehouse building now being erected at Manchester under the direction of Messrs. Charles Heathcote & Sons, architects, of 64, Cross Street, Manchester. The photograph reproduced above was taken on February 27th, and though it shows only one corner of the work it fairly represents some of the difficulties to be met with. It will be noticed that the old brick arch over the canal is being stripped. Turning now to the illustration below, one sees the result of a week's work and the arrival of the girders for the superstructure. Each week we shall publish a photograph showing the regular progress of the building, which is to be a complete steel frame structure of six storeys, including basement. We think the illustrations will show clearly that the ability to erect a building speedily is not confined to the much-talked-about American contractor.



THE BUILDING OF HOYLE'S WAREHOUSE, MANCHESTER (CHARLES HEATHCOTE AND SONS, ARCHITECTS). PHOTOGRAPH TAKEN MARCH 5TH.

The architectural floor plan of the Manchester Royal Infirmary is a complex layout showing various departments and their interconnections. The plan is oriented with Ashlea Street at the top and Deakin Street at the bottom. Key features include:

- Top Section:** Ashlea Street, a covered way, and a building labeled "Cancer Hospital".
- Left Section:** Deakin Street, a covered way, and a building labeled "Manchester Royal Infirmary".
- Central Section:** A large "Surgical Unit" with a central circular area labeled "Surgical @ male 16 beds". It includes a "Surgical Female 20 Beds" ward and a "Surgical Male 16 Beds" ward. The unit also features a "Day Class Room", "Reception", "Waiting", "Operating", "Anesthetics", and "Sterilizing" areas.
- Right Section:** A "Medical Unit" with a central corridor and several wards, including "Medical Female 18 Beds", "Medical Male 22 Beds", and "Medical Male 22 Beds". It also includes a "Day Class Room", "Reception", "Waiting", "Operating", "Anesthetics", and "Sterilizing" areas.
- Bottom Section:** A "Surgical Unit" with a central circular area labeled "Surgical @ male 16 beds". It includes a "Surgical Female 20 Beds" ward and a "Surgical Male 16 Beds" ward. The unit also features a "Day Class Room", "Reception", "Waiting", "Operating", "Anesthetics", and "Sterilizing" areas.
- Other Features:** A "Covered Way" runs horizontally across the middle of the plan. A "Yard" is located between the Cancer Hospital and the Surgical Unit. A "Garage" is located near the bottom left. A "Bus Stop" is located near the bottom right.

BERLIN
STREET

CANCER HOSPITAL

ASHLEA STREET.

Covered Way

Covered Way.

100

Surgical Unit*

Medicinal Unit:

Medical Female 18 Beds

Syracuse, N. Y. 10004

Surgical  mole 16 Beds

10. Swire, Female 20 Bo.

Medical Male 22 Beds

Medical Male 12 Beds

Food
Bed
in
Cave

1

R.I.B.A.

Mr. Stanley Peach on Electricity-Generating Stations.

A MEETING of the Royal Institute of British Architects was held on Monday evening last, the chair being occupied by the president, Mr. Aston Webb, R.A.

Mr. Charles Stanley Peach, F.R.I.B.A., read a paper on the design and construction of electricity-generating stations.

In his preliminary remarks Mr. Peach said that in less than twenty years these have developed from small commonplace sheds to complex structures frequently of great size; upwards of 750 of these buildings have in about fifteen years been erected in the United Kingdom alone, and many more abroad. The advantages of electricity were appreciated sooner abroad than in Great Britain—here, also, it was hampered for a time by unfortunate legislation—and the industry had made considerable progress in foreign countries before a start was made here. Hence it is useful to study foreign practice, for that which obtains abroad to-day is more or less that which will be put into practice in England to-morrow.

Central stations may be divided into three classes: (1) The power station—the class now coming into vogue and the real central station—at which power is generated for the district allotted to it, whence it is supplied to sub-stations for distribution; (2) the sub-station, of which there are two principal subdivisions—(a) sub-stations housing machinery and batteries or accumulators for storing electricity, and (b) sub-stations without storage and accommodating machinery only; (3) direct-supply stations (sub-divided into simple and composite), where the power is both generated and distributed. (The simple direct-supply station comprises the machinery departments only. The composite direct-supply station is rather an electricity works, and contains, in addition to the rooms for machinery, accommodation for meters, mains and road-work, tramways and administration departments, sometimes also destructor, &c.)

Mr. Peach treated at considerable length the building requirements, equipment and arrangements of the various classes of power stations, describing more or less fully the principal stations in the United Kingdom, on the Continent and in America. Working drawings and views of the buildings were shown by lantern slides, and a large number were displayed on the walls of the meeting-room.

The simplest kind of station is that in which air or wind is the source of power. The only station of this kind, that at Askov, consists of a single room containing dynamos and accessory machinery. It has been running satisfactorily since its erection in 1902.

A great number of water-power stations have been erected abroad, but there are none of first-class importance in Great Britain. They are usually one-storey buildings above the ground line, having one and occasionally two or more principal rooms. By reason of the flumes, aqueducts, weirs and sluices required for diverting and controlling the water and directing it to the turbines, and for leading it back to its natural channels, the foundations of these buildings, honey-combed with chambers and tunnels, are the most interesting parts of the works. Their construction requires considerable technical skill, as almost every kind of vault, dome and curved structure meeting and intersecting at every kind of angle is to be found.

At Niagara, probably the best-known water-power station, the volume of water is estimated to represent 7,000,000 h.p., the greater part of which can, and eventually will, be made available. Thus a force equivalent to the consumption of over

200,000 tons of coal per day (practically the daily output of the world's coal mines) will be penned in and controlled in the buildings. The machines dealing with this power must all be fixed rigidly in one place, and will be concentrated in a comparatively small area. This concentration and fixing of machinery of enormous power within a building is a new feature. The structure must be calculated with an ample margin of safety, and to allow considerable strength above what would be considered sufficient in ordinary practice.

Some of the European water-power stations are interesting examples of well-studied architectural treatment. A picturesque example is the power station at Tivoli, on the Tiber, where the energy for the city of Rome is generated.

The steam-power station, a comparatively recent introduction, is a more complicated building than that for water-power. The station of the London Electric Supply Corporation at Deptford was perhaps the first of this kind, designed by Mr. Ferranti in 1888. Stations erected ten years later in America have followed very closely Mr. Ferranti's design. The special construction problem presented is the manner in which the heavy loads requiring to be accommodated in these buildings have to be disposed on the site. The Americans have displayed great ingenuity in installing very powerful plant on sites of small superficial area; stations with plant on more than one floor are more common there than elsewhere. A remarkable instance is the Edison station at Philadelphia, where the plant is installed in an eleven-storey building.

The Manhattan station, New York, is typical of central stations generally in one respect. It is built on a bad foundation, the gneiss bed rock bottom being deeply eroded by streams which formerly traversed it. It was therefore of unequal supporting power, which accounts for the apparently unequal strength and thickness of the foundations. Large quantities of water are used in connection with the work carried on in central stations, so that they are frequently erected on the banks of rivers and canals, where the sub-soil is hardly suitable for such buildings, and careful adjustment of the weight is necessary. Sometimes the subsoil is hard in places and yielding in others. In such cases foundations like those of Manhattan have been found suitable, but in very soft soils much water-logged it is as a rule better to support the load on concrete floats proportionate to the weight, allowing somewhat more than half the load which would be taken for an ordinary building. A thick float of concrete all over the site is a common method of meeting the difficulty, both in English and German practice. It is a good plan on clay, but should be keyed on the underside on looser soils.

Referring to the architectural treatment of some of the Continental stations, Mr. Peach said that the buildings are faced externally with fine hard bricks, bright buff, laid in the German fashion, all headers. The gable ends are well treated with very large windows and strongly-marked divisions in the lights. The general wall-faces are plain, but the header bond gives an excellent scale to the buildings, and the ornament is concentrated in a few well-designed and well-placed features by which the full value of the expenditure on embellishment is obtained. It is often said of buildings treated like the Geneva, Munich and Berlin stations that they are expensive. As a fact, they are generally less costly than many buildings which look plain and are so described.

Other notable buildings are the power station at Munich, with its interesting and original shaft, the whole forming a most picturesque group with the baths that adjoin it; the station at Turin, with elegant

gable treatment and a circular brick shaft, well treated with pilasters and cornice at the top and plain brickwork below, partly water-power and partly steam; an interesting example of Italian practice at Vicenza, where a most ingenious arrangement of double arches and open tile-work is adopted for the windows.

Almost every combination and kind of plant and design of central station is to be found in Great Britain. One of the largest power houses in London will eventually be that of the Central Electric Supply Co. at Grove Road, St. John's Wood, which will supply power for general purposes for the west-end districts of London served by the Westminster Electric Supply Corporation and St. James's and Pall Mall Electric Lighting Co. It is situated on the banks of the Regent's Canal, the site being $7\frac{1}{2}$ acres in extent, all of which will eventually be covered with the buildings. Upwards of 150,000 h.p. can be placed on the site if the plant is arranged on the one-floor system. The one-half of the first section has recently been completed, and provides accommodation for 14,800 h.p.

The simple direct-supply station consists of the machinery departments somewhat on the same lines as the power station. It was almost the earliest form of station, and originated simultaneously with the composite form of direct-supply station. It was required in those districts which were too large to be served by one central station, before the days of the power station. It is not probable that many more of these stations will be required. Some of the existing simple direct-supply stations are already being converted into sub-stations, and in time, no doubt, the steam plant will be taken out of many and be replaced with electrical machinery only.

Of the composite type of direct-supply stations though, in small towns, in the country remote from other towns or from centres where power can be generated under exceptionally favourable conditions, and in agricultural districts, this type will be erected for some years to come; sooner or later combination between towns and districts will take place, and co-operative power stations will replace this class also, and those then existing will become at any rate partly sub-stations also.

Sub-stations to accommodate static transformers were formerly small unimportant structures, frequently vaults under the pavement or roadways, or in basements of houses. It is now, however, a building requiring careful design and of daily increasing importance. The function of the plant installed in it is either to alter the character or to reduce the tension of energy derived from the power stations, and to distribute either the same energy at another potentiality or to generate and distribute new energy at low tension by means of dynamos directly coupled and driven by motors. Every precaution should be taken to prevent transmission of mechanical vibration or escape of sound beyond the building. The buildings must be dry, well-ventilated and well-lighted in every part.

Mr. Peach gave some interesting illustrations of the chimney-shafts of central power stations. These are not ordinary factory chimneys. Their importance to the undertaking, and consequently to the community, their great size, and the fact that they may be erected in groups of from two up to six or more, require that they should be of better construction and appearance than is often deemed sufficient. Cast-iron caps are frequently objected to as being heavy; properly designed, they are lighter than a corresponding height of brickwork. Within reasonable limits a fairly heavy cap is an advantage and not a disadvantage.

A discussion followed.

Correspondence.

American and English Contractors' Methods.

To the Editor of THE BUILDERS' JOURNAL.

NEW YORK, U.S.A.

SIR,—The interview with Mr. Henry Holloway in regard to building in America, published in your issue for March 2nd, is excellent. It is salutary to read the frank and honest criticism of a keen observer who brings to the review of such a situation a mind that is wholly free from personal, business or racial prejudices and predilections. It is impossible for an American to deny that most of Mr. Holloway's conclusions are well grounded. But, in justice, there is one point that would seem to need correction. That is the inference that the public at large or the building trades in particular look with indifference or approval on the sharp tricks by which a few concerns have used the machinery of trade-unionism, through unscrupulous walking delegates, to injure business rivals and defeat fair competition. Mr. Holloway relates one flagrant instance (perfectly true, it is believed) in which a great corporation made use of a man named Sam Parkes, who called strikes on jobs of a competing concern and thereby prevented it from getting a large contract. Mr. Holloway was surprised that this was regarded as ordinary business and entitled to no reprobation. I beg leave to correct him. Americans are easy-going, and they put up with many impositions before they will openly complain or fight for their rights. This, doubtless, is because of the self-consciousness, the vanity and the anxiety for approval which most foreigners have noted in the American character. But to draw the conclusion that an American does not severely condemn a practice because he laughs at it and treats it lightly in public speech is to look only at the surface.

There have been no developments in the labour field for years that have created a greater sensation in the American building trades than these illicit combinations and underhand dealings. That a number of them have recently been brought to light does not necessarily point to a low state of public morality. No branch of industry is at any time wholly free from rascality. Particular attention was attracted to the case mentioned by Mr. Holloway because the concern involved was so enormously wealthy. The vast combinations of capital that are a feature of modern financiering efforts have a tendency to bring forward men of tricky nature, who run their brief course and are then crowded out and relegated to obscurity. Men of probity are in the great majority in most of the directorates, and they will not lend their names to questionable methods. Are not the newspapers full of accounts of the drastic means that have been taken by the great corporations to purge themselves of tricksters? Financial and trade combination has been in tremendous ferment, and fermentation always brings the froth to the top. America is now skimming this off. We believe that we are as honest as any other race, and so we think that the resultant broth will be clean and wholesome.

The great building concern which unlawfully employed the services of Sam Parkes and men of his stamp was promoted by sharp and scheming men from the West. They held control at the outset, and they brought with them methods that were entirely foreign to the building trades in New York. But the directorate was made up of solid bankers and respected business men. The revelations about the underhand methods came as a stunning blow to the stockholders as well as to the public. The directors did not rush into print to prove

that their skirts were clear. But they decided that they would put an end to these tricks or disrupt the company. There has been a complete revolution in this particular concern, and those whose names were smirched have been forced out. Furthermore, the entire question of these contemptible relations between employers and the labour unions has been brought to the attention of the public prosecutors. Several of the bribe-takers are now in prison, but it is an extremely difficult matter to reach the bribe-givers. It is possible that they may never get their legal punishment, but to claim that the public held their practices to be "ordinary business" or failed to use every effort to keep the relations between labour and capital honest and decent is unfair. Trade-unionism has brought to us in America a most tremendous problem, just as it has to England. It will not be settled here or in your country without sharp practices and dishonesty. Perhaps the rascal will have a little freer rein in America than in England, because our laws are less stringent and, unhappily, we have not yet learned that party politics and municipal government are two separate and distinct things. But, believe me, intelligent public opinion is just the same here as elsewhere.—Yours truly,

FRANK W. HOYT,
Editor "Stone Magazine."

Enquiries Answered.

The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

"Stu-ka-lite."

ST. ALBANS.—E. D. writes: "Can you give me any information respecting 'Stuccolite'? It is a kind of roofing felt, but I cannot find the maker's name."

This is supposed to be the plastic stone or marble of the ancient Egyptians. It is supplied by the Stu-ka-lite Syndicate (B. R. Ikin, distributing agent), 139, Bridge Street, Greenwich, London, S.E., from whom all particulars can be obtained.

Valuations.

SUBSCRIBER writes: "Which is the most satisfactory method of proceeding for the valuation of house and land property, and what are the various practical methods of arriving at an estimate for repairs?"

This is a very wide question, and I can only answer it in a very limited degree here. I will therefore assume you only refer to freehold land and houses let at rack rental. Briefly, the rule is that agricultural land should be bought to pay 3 per cent. interest; accommodation land, 4 per cent. per annum; good class houses, 5 per cent.; and cottages and inferior class property, 6, 7, 8 or even 9 per cent., according to condition and locality, &c. Starting from this, first ascertain the gross annual rental or value of the property you wish to value, and deduct from that sum all outgoings, such as land tax, tithe, insurance, legal expenses and cost of rent collection, rates (if payable by owner), average annual cost of repairs, &c. Multiply the nett annual income thus obtained by the number of years' purchase which corresponds to the interest that kind of investment should produce: at 3 per cent., 33 years ($100 \div 3$); at 4 per cent., 25 years ($100 \div 4$); at 5 per cent., 20 years, and so on. The figure thus obtained is the capital value of the property in question. In practice, however, the matter is rarely as simple as this, because such factors as the facilities for improvements which the site affords, the special demand for

that class of property (or the reverse) and many other considerations must all be taken into account. The estimate of the average annual cost of repairs must always be a matter of judgment, and the precise amount depends on the character of the buildings, their age, class of tenant and so forth. As a rough guide, I may say it is usual to allow from 15 to 20 per cent. for repairs to houses of moderate size and from 20 to 25 per cent. in the case of cottages. Should house property be in a bad state of repair at the time of purchase, a "lump sum" should be deducted from the capital value (ascertained as above) to cover the expenditure then immediately necessary. F. S. I.

Book on Tunnelling.

ISLE OF MAN.—MECHANIC writes: "I should be glad if you would kindly name a good book on tunnelling."

See our Book List, No. 3 (p. ii., February 10th).

Designing Steelwork.

LONDON, S.W.—N. Z. writes: "(1) In Gordon's formula (Hurst) what is the proper value of 'a' when calculating the sectional area of a steel stanchion made up of 2 r.s.'s. and one or more plates? Hurst gives it for other sections, but not for this very ordinary form. (2) What is the safe crushing strength per square inch of section for the steel used in these stanchions, in relation to their least diameter? (3) In a wrought-iron roof-truss soft, span, and of 'trussed rafter' type, with tension members formed of two flat bars, I have a stress of 2'42 tons on each of the two short inner tension bars, which are each $\frac{3}{4}$ in. Which is the best way to secure them at the ends to the plates?—they seem too narrow to rivet as they are, and to widen at the ends means extra expense for forging. (4) What is the safe shearing strength of rivets in this position?"

(1) In Gordon's formula for struts and stanchions, $w = \frac{fs}{1 + \frac{l^2}{ad^2}}$, f = ultimate stress

on material in tons per square inch, say, 26 for steel, s = sectional area in square inches, l = unsupported length in inches, a = co-efficient of section, say, 900 for built-up steel stanchions, d = least diameter in inches, w = breaking weight in tons, which should be divided by 6 to obtain the safe load. (2) A safe crushing strength is a misnomer; it is presumed that safe working load in compression is intended. This can only be given approximately with relation to ratio of height to least diameter, otherwise Gordon's formula would be unnecessary. Approximately the safe load in tons per square inch sectional area will be for—

10 diameters long	4'75 tons.
20 " "	4'0 " "
30 " "	3'25 " "
40 " "	2'5 " "

but the load must be truly central and proper cap and base plate provided. (3) In designing a roof-truss, the sections of the tension bars must be so proportioned as to provide area for the rivet holes and leave the required sectional area for tension in addition. A $\frac{3}{4}$ in. bar would only provide section enough for the stress of 2'42 tons without rivet holes, and must therefore be widened out by the diameter of one rivet. Sufficient rivets may be obtained by placing them one behind the other along the bar, connecting it at the ends by gusset plates if necessary. See any work on iron roofs, say, "The Practical Designing of Structural Ironwork," chap. xi. (Spon, 8s. 6d.). (4) The safe stress on steel rivets in single shear is 6 tons per sq. in., and in double shear $7\frac{1}{2}$ tons per sq. in. It is not safe to make the latter double the former owing to the irregularity of ordinary workmanship.

HENRY ADAMS.

Keystones.

☞ **Dublin's New Technical School.**—At last week's meeting of the Dublin City Council the proposal to erect the new technical school on the east side of Rutland Square was defeated by a majority of five votes.

New Book.—Mr. Batsford will publish in a few days "Homes for the Country," a new book of designs and examples of houses recently erected by Mr. R. A. Briggs, author of "Bungalows and Country Residences."

A new Sanatorium for infectious diseases has been erected for the Scarborough Corporation, at a cost of about £15,000, from plans by Mr. Harry W. Smith, the borough engineer.

Mr. G. E. Halliday, architect, of Cardiff, has been re-elected surveyor for the Llandaff Archdeaconry under the Ecclesiastical Dilapidations Act, 1871, and Mr. W. H. Dashwood Caple, architect, Cardiff, for the Monmouth Archdeaconry.

Waverley Abbey.—At the annual meeting of the Surrey Archaeological Society at Guildford it was reported that the excavations which had been carried out at Waverley Abbey, Farnham, had made it possible to draw a plan of the conventual buildings which was the most complete of any which had as yet been made of a Cistercian house.

Castle Ward.—When this castle was rebuilt on the shores of Strangford Lough, Ireland, upon the site of the ancient stronghold, the then Lord and Lady Bangor had a dispute in regard to its architecture. One was for Greek art, the other for Byzantine. In the end the matter was compromised; and the edifice as it stands is Hellenic on one side, Byzantine on the other.

A Lecture on "Architectural Photography" was given by Mr. E. C. Skill before last Thursday's meeting of the Sheffield Society of Architects and Surveyors. All the details of the apparatus were considered and illustrations were given to show the effects of illumination, halation, exposure, &c.; attention was also drawn to the isochromatic plate and screen, slides being shown of views taken with and without these.

Barnes Old Parish Church, which is said to be of not later date than the reign of Richard I., is to be enlarged. Within the last century it has been enlarged by the addition of a north aisle, which gives the interior a somewhat lop-sided appearance. The present proposal is to add another aisle corresponding with the old portion of the fabric, thus converting the existing north aisle into the nave and making the interior more symmetrical.

"**Modernity in Decoration**" was the title of a lecture delivered last week by Mr. Lewis F. Day at the Technical College, Bradford, under the auspices of the Northern District Branch of the Incorporated Institute of British Decorators. He protested against the assumption that the "new art," so called, was really entitled to represent the modern spirit; it was a warning against the folly of cutting modern art adrift from the past. Our art was necessarily, and could not help being, modern: there was no use either in forcing the note of novelty or in trying to make it as modern as could be. He would have artists neither hasten to meet the mood of the moment nor blindly submit to it, least of all endeavour to outrun it. Mr. Day had a good deal to say as to the rashness of letting go all hold upon tradition. The moral of what he had to say on the point of style was, in fact, "eclecticism," choice, the fusion, perhaps, not the confusion of types; though he admitted historic style to be at the best only an incentive—less a thing to follow than a point of departure.

London Bridge was reopened on Monday, after having been partially closed for about eighteen months while the widening was being carried out (at a cost of £100,000).

Stage Furniture.—Messrs. Oetzmann & Co., of Hampstead Road, W., have supplied the furniture and draperies for "His Excellency the Governor," now being played at the Duke of York's Theatre.

Knepp Castle, Shipley, destroyed by fire in January last, is being rebuilt by Messrs. Longley, contractors. The outer walls, with their castellated towers, will be preserved as much as possible, so that externally much of the noble mansion will be retained.

Shrewsbury Abbey Tower, dating from the fourteenth century, is in need of careful repair. A fund is now being raised for executing the necessary work, which will be supervised by the Society for the Protection of Ancient Buildings.

Little Ilford Congregational Church and Schools were opened on March 17th. Messrs. Gough & Co., of London, were the contractors, and the architects were Messrs. George Baines & R. Palmer Baines, of 5, Clement's Inn, Strand, London.

The Cowen Memorial at Newcastle is to be erected in Westgate Road, just opposite the County Court buildings. Mr. T. Eyre Macklin, R.B.A., Newcastle, Mr. Kellock Brown, Glasgow, and Mr. John Tweed, London, are to submit models (premiums £100, £50 and £25) by August 1st.

A Mural Painting.—The dining-hall of the Nurses' Home at Guy's Hospital has just been enriched with a wall painting representing "The Months," after a design which won the annual prize of £40 at the Royal Academy Schools three years ago. Miss Florence E. Chaplin is the artist.

Mr. S. H. Healing, of Gloucester, and Mr. T. Overbury, of Cheltenham, architects and surveyors, have entered into partnership and taken over the offices and architectural practice of Mr. Joseph Hall, late borough surveyor of Cheltenham, at Lloyds Bank Chambers, Cheltenham.

Leeds and Yorkshire Architectural Society.—Mr. G. B. Bulmer, F.R.I.B.A., will be the president for the year commencing May 1st next, and Messrs. H. S. Chorley, M.A., A.R.I.B.A., and W. G. Smithson, A.R.I.B.A., the vice-presidents. At last week's meeting a paper was read by Mr. Starkie Gardner, F.S.A., on "Lead in Architecture."

Marylebone Municipal Dwellings.—The municipal dwellings now being erected in John Street, Edgware Road, will have a frontage of 107ft. and a depth of 89ft. At the back a courtyard has been left with an area of 4,986ft., which will be used as a playground by the children of the tenants. The building will be seven storeys high, and will contain on the lower floors eighteen single-room tenements for old people. The five upper floors will contain two-room and three-room tenements, there being ninety-six rooms altogether. Mr. H. B. Measures is the architect and Messrs. J. Chessum & Sons are the builders.

A new Church at Eastney Barracks, near Portsmouth, is being erected for the Royal Marine Artillery to replace the existing wooden structure. It will seat 1,000. The materials are red bricks for the walls both inside and outside, with Bath-stone dressings inside and Portland stone outside; the roof is to be of red pine, having open framed principals in the nave and aisles and a panelled wagon vault in the chancel, covered with green Westmoreland slates. The designs for the church were prepared in the head office of the Works Department of the Admiralty, and are being carried out by Mr. Corke, builder, of Southsea, at a cost of about £11,000.

Tenders.

Information from accredited sources should be sent to "The Editor" at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Addressed postcards on which lists of tenders may be stated will be sent free on application to the Manager, BUILDERS' JOURNAL, 6, Great New Street, Fetter Lane, E.C.

Boreham Wood.—Accepted for six cottages at Boreham Wood, Herts, for Mr. Albert Williams. Mr. Henry James Wise, architect, 7, Great James Street, Bedford Row, W.C. :—

Bracey & Clark, Watford £1,263

Brighton.—For the erection of new engineering workshop, &c., at the municipal technical school, for the Education Committee :—

G. R. Lockyer £1,866

J. & W. Simmonds 1,778

J. Parsons & Sons 1,674

Rowland Brothers 1,669

W. A. Field & Co. 1,661

J. Longley & Co. 1,649

J. Barnes 1,647

R. Cook & Sons 1,636

Sattin & Evershed,* Freshfield Road, Brighton 1,630

* Provisionally accepted.

Dorking.—For the construction of about 5,699yds. of 7in. and 6in. pipe sewers, with the necessary manholes, lamp-holes, flushing chambers, &c.; also of sewage-disposal works, pumping station, rising main, roads, &c., at Westcott, in the parish of Dorking Rural, for the Dorking Rural District Council. Mr. W. Rapley, jun., surveyor, Clovelly, Lower Hill, Dorking :—

F. W. Trimm, Dorking £9,990 0 0

T. Free & Sons, Maidenhead 9,648 18 3

G. G. Rayner, Croydon 9,561 18 0

H. Roberts, West Bromwich 9,071 0 0

G. S. Falkner, Reigate 8,985 0 9

Peerless-Dennis & Co., Easibourne 8,860 0 0

Johnson & Langley, Leicester 8,642 7 4

Davies, Ball & Co., Bromley, Kent 8,633 19 9

Streeters & Todhunter, Godalming 8,610 0 0

E. T. Bloomfield, South Tottenham 8,417 17 8

A. Dixon & Co., Bradford 8,350 1 0

J. G. Pickard, Turner's Hill, Sussex 8,184 13 11

J. W. Dean, Ltd.,* Birkbeck Bank Chambers, Chancery Lane, W.C. 7,773 0 4

* Accepted.

Gorleston.—For rebuilding public-house at Gorleston, near Yarmouth. Messrs. Morgan & Buckingham, architects, 3 Redwell Street, Norwich :—

J. E. Pestell £1,440

C. E. Earl 1,424

Barham & Swan,* Lowestoft 1,398

* Accepted.

Hull.—For the erection of school buildings, &c., adjoining the church, for the Trustees of the Boulevard Baptist Church, Hull. Mr. T. Brownlow Thomson, architect, 15, Parliament Street, Hull :—

E. Good & Son £3,450 0 0

F. W. Wilson 3,438 9 7

Amalgamated Builders, Ltd. 3,367 9 9

J. E. Train 3,145 16 4

G. Houlton 3,124 0 0

J. Ralston 3,122 12 9

G. Berridge 3,094 12 7

Bowman & Sons 3,072 0 0

H. Neal 3,060 11 0

F. Bilton 3,051 15 8

J. Simpson & Son 3,031 10 6

T. Goates 3,008 0 0

J. R. Woods 3,007 0 0

M. Harper 2,980 19 0

H. T. Arnott 2,959 0 0

H. Kaye 2,910 0 0

* Accepted.

[All of Hull.]

Kingston-upon-Thames.—For making internal alterations to the engine-room and coal store, building small office and constructing foundations for new machines, &c., at the workhouse infirmary, Kingston-on-Thames, for the Guardians. Mr. William H. Hope, C.E., architect, Seymour Road, Hampton Wick :—

W. R. Lane & Son, Kingston-on-Thames £2,327 0 0

McDonald Brothers, Surbiton 2,299 0 0

Mallett & Wood, Luton 2,253 0 0

W. J. Coleman & Co., Brixton, S.W. 2,170 0 0

A. F. Mitchell, New Malden 2,103 9 0

C. E. Oldridge & Sons,* London Road, Kingston-on-Thames 2,074 10 0

* Accepted.

Knutsford.—For the erection of a free library, for the Urban District Council. Messrs. Darbyshire & Smith, architects, 17, Brazennose Street, Manchester :—

Burgess & Galt £1,710 0 0

Hamilton & Son 1,651 0 0

Beswicks 1,645 0 0

Brown & Son 1,640 0 0

M. Stone 1,570 0 0

J. Acton 1,510 0 0

Clayton Brothers 1,482 14 0

Hughes & Stirling 1,482 0 0

Redfern Brothers,* Knutsford 1,435 0 0

* Provisionally accepted.

London.—For sanitary and drainage works at the Middle Row School, Kensal New Town, for the London School Board. Mr. T. J. Bailey, Board's architect :—

G. Neal £3,018

R. P. Beattie 2,864

G. Godson & Sons 2,855

F. G. Minter 2,801

Burn Brothers 2,776

F. Bull 2,729

Lathey Brothers 2,700

J. Peattie 2,66

* Recommended for acceptance.

Langho (near Blackburn).—For the proposed epileptic homes, &c., in connection with their new colony at Langho, near Blackburn, Lancashire, for the Chorlton and Manchester Joint Asylum Committee. Messrs. Giles, Gough & Trollope, architects, 28, Craven Street, Charing Cross, London, W.C.

First portion for 240 patients.

Pattinson & Sons, 49, and 50, Parliament Street, London, S.W.	£83,499	0	0
A. White & Sons, Liverpool	83,030	16	9
W. Thornton & Sons, Liverpool	76,725	0	0
Armistead & Hodson, Leeds	75,633	0	0
H. Vickers, Ltd., Nottingham	75,050	10	6
Shillitoe & Son, Bury St. Edmunds	73,100	0	0
H. Vickers & Son, Nottingham	72,700	0	0
W. J. Bloxham, Banbury	72,250	0	0
W. Storr, Sons & Co., Ltd., Stalybridge	71,899	0	0
Gerrard & Sons, Manchester	71,800	0	0
T. Rowbotham, Birmingham	71,000	0	0
Wilcock & Co., Wolverhampton	70,500	0	0
W. Thorpe, Manchester	70,413	0	0
Whitaker & Sons, Blackburn	69,882	0	0
J. Holand, Blackburn	69,600	0	0
J. Knowles, Darwen	69,500	0	0
J. Tinline, Bury, Lancs.	68,995	0	0
S. & J. Smethurst, Oldham	68,630	0	0
J. Hatch & Son, Lancaster	67,385	0	0
Moss & Sons, Ltd., Loughborough	66,639	0	0
Brown & Son, Salford	66,000	0	0
R. Neil & Son,* Manchester	63,950	0	0

London.—For improvements at Sleaford Street School, Battersea Park Road, for the London School Board. Mr. T. J. Bailey, Board's architect:—

General Builders, Ltd.	£11,760
E. Lawrence & Sons	10,252
J. Simpson & Son	9,997
Martin, Wells & Co., Ltd.	9,989
Rice & Son	9,945
J. Garrett & Son	9,857
Holloway Brothers, Ltd.	9,835
E. Triggs	9,701
Spencer, Santo & Co., Ltd.	9,617
Edwards & Medway	9,584
T. D. Leng	9,578
Hudson Brothers	9,569
J. Carmichael	9,548
Lathey Brothers	9,289
W. Johnson & Co., Ltd.	9,247
Stimpson & Co.*	9,210

* Recommended for acceptance.

London.—For enlargement of Holbeach Road School, Catford, for the London School Board. Mr. T. J. Bailey, Board's architect:—

Holliday & Greenwood, Ltd.	£5,577
Rice & Son	5,558
Edwards & Medway	5,553
G. E. Wallis & Sons	5,539
J. & C. Bowyer	5,436
W. Akers & Co.	5,201
J. Smith & Sons, Ltd.	5,195
Treasure & Son	5,188
E. P. Bulled & Co.	5,092
W. J. Mitchell & Son	5,068
T. D. Leng	5,037

* Recommended for acceptance.

London.—For the erection of a school, Gordonbrook Road, Brockley, for the London School Board. Mr. T. J. Bailey, Board's architect:—

J. Greenwood, Ltd.	£25,892
Perry & Co.	25,781
Leslie & Co., Ltd.	25,715
J. Simpson & Son	25,475
J. & M. Patrick	25,464
C. Miskin & Sons	25,055
T. L. Green	24,866
E. Lawrence & Sons	24,829
J. Garrett & Son	24,782
J. Longley & Co.	24,698
J. Chessum & Sons	24,607
Martin, Wells & Co., Ltd.	24,540
Patman & Fotheringham, Ltd.	24,211
F. & H. F. Higgs	24,149
Stimpson & Co.	24,100
C. F. Kearley	24,076
McCormick & Sons	24,061
J. Carmichael	24,047
Treasure & Son	24,023
Hudson Brothers	24,004
W. Johnson & Co., Ltd.	23,995
W. J. Mitchell & Son	23,993
J. & C. Bowyer	23,683
Lathey Brothers	23,680
C. Deering & Son	23,513
J. Smith & Sons, Ltd.	23,280
Holliday & Greenwood, Ltd.	23,236
G. E. Wallis & Sons	22,987
W. Downs*	22,863

* Recommended for acceptance.

London.—For enlargement of the Alma School, Southwark Park Road, for the London School Board. Mr. T. J. Bailey, Board's architect:—

J. Greenwood, Ltd.	£2,985	0	0
E. Triggs	2,884	0	0
E. P. Bulled & Co.	2,875	0	0
H. Groves	2,862	0	0
Rice & Son	2,804	0	0
F. G. Minter	2,803	0	0
Edwards & Medway	2,783	0	0
Holloway Brothers, Ltd.	2,786	0	0
J. Garrett & Son	2,781	0	0
H. Wall & Co.	2,779	0	0
J. Marsland & Sons	2,775	0	0
E. B. Tucker	2,752	1	0
W. Downs	2,683	0	0
G. Neal	2,674	0	0
W. Akers & Co.	2,671	0	0
Lathey Brothers*	2,657	0	0

* Recommended for acceptance.

New Malden (Surrey).—For the erection of public offices, fire-station, &c., at New Malden, for the Maldens and Coombe Urban District Council. Mr. W. H. Hope, C.E., architect, Hampton Wick:—

C. F. Howell, Kingston-on-Thames	£6,830	8	9
D. W. Barker, Croydon	6,657	0	0
McDonald Brothers, Surbiton	6,656	3	9
Cropley Brothers, Ltd., Epsom	6,089	0	0
Foster Brothers, Norwood Junction, S.E.	6,031	0	0
Buckingham & Son, Wimbledon	5,930	0	0
General Builders, Ltd., Notting Hill	5,897	0	0
J. S. Kimberley, Banbury, Oxon.	5,836	7	0
Higgs & Owthwaite, Cobham, Surrey	5,754	0	0
B. E. Nightingale, Albert Embankment, S.E.	5,647	0	0
F. G. Minter, Westminster, S.W.	5,576	0	0
Lane & Son, Kingston-on-Thames	5,561	10	0
A. W. Robins, Wanstead, N.E.	5,490	0	0
Oldridge & Sons, Kingston-on-Thames	5,490	0	0
Gaze & Sons, Kingston-on-Thames	5,427	0	0
McC. E. Fitt, Reading	5,257	0	0
Ferguson & Co., Holborn, W.C.	5,167	0	0
Goddard & Sons,* Dorking	5,000	0	0

* Accepted.

New Malden (Surrey).—For the erection and completion of cottage homes at New Malden, for the Guardians of Kingston Union. Mr. William H. Hope, G.E., architect, Seymour Road, Hampton Wick:—

J. Scofield, New Malden	£9,167	7	6
M. G. King, Teddington	8,386	10	5
West & Richards, South Hackney	7,990	0	0
Perry & Co., Bow, E.	7,890	0	0
Potter Brothers, Horsham	7,890	0	0
S. E. Moss & Co., Southend	7,683	0	0
Speechley & Smith, Richmond	7,650	0	0
Goddard & Sons, Dorking	7,610	14	0
C. E. Sims, Ham Common, Surrey	7,595	0	0
Mussellwhite & Sapp, Basingstoke	7,539	0	0
G. Gray, Egham	7,430	0	0
W. J. Renshaw, Putney	7,393	0	0
Waller & Co., Belgrave, S.W.	7,350	0	0
J. Longley, Crawley, Sussex	7,345	0	0
B. H. Davey, Southend-on-Sea	7,287	0	0
Robson & Moon, Croydon	7,285	0	0
C. Oldridge & Sons, Kingston	7,268	0	0
Jones Brothers, Tooting, S.E.	7,211	18	4
Cropley Brothers, Epsom	7,198	0	0
J. Hebblethwaite, Twickenham	7,070	0	0
C. W. Horton, Wandsworth	7,051	0	0
Johnson & Co., London, S.E.	6,998	0	0
J. Appleby & Son, London, S.E.	6,975	0	0
H. Somerford & Son, Clapham	6,964	0	0
W. A. Smyrk, New Malden	6,954	16	3
G. Kemp, Aldershot	6,949	0	0
H. Collings & Son, Norbiton	6,917	0	0
McDonald Brothers, Surbiton	6,906	13	6
J. Ferguson & Co., Holborn	6,882	0	0
W. Smith & Sons, Croydon	6,784	0	0
F. Hawkey, Surbiton	6,629	12	0
J. Barker & Co., Ltd., London, W.	6,626	0	0
McC. E. Fitt, Reading	6,593	0	0
A. F. Mitchell, New Malden	6,484	3	3
J. Burgess & Sons, Wimbledon	6,439	0	0
Mallett & Wood,* Cardiff Grove, Luton	6,304	11	0
B. E. Nightingale,† Albert Embankment, S.E.	5,757	0	0

* Accepted. † Withdrawn.

Oxford.—For extension of premises and erection of new offices and stores in Russell Street, Oxford, for the Oxford Electric Co. Mr. Herbert Quinton, architect, 22, George Street, Oxford:—

Knowles & Son	£2,360
J. Woodbridge	2,332
T. H. Kingerlee & Sons*	2,097

[All of Oxford.]

Surbiton.—For the erection of a Baptist Chapel in the Balacra Road, Surbiton. Mr. Alfred Mason, architect, Broughton Chambers, Surbiton:—

W. H. Young, Kingston	£2,596	0	0
Lane & Son, Kingston	2,574	0	0
Ellis & Turner, Surbiton	2,550	0	0
Crabb & Son, Tulse Hill	2,539	0	0
Leonard & Mason, Victoria Street, S.W.	2,535	0	0
Mussellwhite & Sapp, Basingstoke	2,534	0	0
J. Cassé, Hampton Wick	2,497	0	0
H. Bishop, Kingston	2,428	10	4
Rice & Son, Teddington	2,397	0	0
G. F. Havell, Kingston	2,367	0	0
E. Alsford, Norbiton	2,350	0	0
H. Buckingham, Wimbledon	2,313	0	0
E. Chamberlain, Addlestone	2,300	0	0
Gaze & Sons, Kingston	2,279	0	0
Cropley Brothers, Epsom	2,197	0	0
B. E. Nightingale, London, S.E.	2,183	0	0
Ferguson & Co., Holborn, W.C.	2,176	0	0
Braid, Pater & Co., Ltd., London, E.C.	2,166	0	0
Aldridge & Son, Willesden Green	2,149	14	0
Dean & Co., Croydon	2,130	10	0
E. Thorogood, Surbiton	2,120	0	0
Foster Brothers, Norwood Junction	2,111	0	0
F. Hawkey, Surbiton	2,042	0	0
Gurr & Sons, Chiswick	1,998	10	0

Tunbridge Wells.—For the erection of a house at Pembury, Tunbridge Wells, for Miss Molesworth. Messrs. C. E. Mallows, F.R.I.B.A., & Grocock, architects, 28, Conduit Street, Hanover Square, W.:—

Mr. Luxford	£4,654
Mr. Saint	4,493
Soper & Jones	4,480
Mansfield & Son	4,404
Jarvis & Son	4,358
Mr. Burr	4,310
Crates & Son	4,250
Strange & Son*	4,070
Leney & Son	3,980

* Accepted.

Weston-super-Mare.—For the erection of a warehouse, Station Road, Weston-super-Mare, for Messrs. Lalonde Brothers & Parham. Messrs. Hans Price & W. Jane, architects, Weston-super-Mare:—

H. A. Force & Son, Bristol	£3,050	0	0
E. J. Lye, Weston-super-Mare	2,998	10	0
W. F. Drew, Chalford	2,850	0	0
C. Addicott, Weston-super-Mare	2,575	0	0
C. Taylor, Weston-super-Mare	2,544	0	0
Gleed Brothers, Bridgewater	2,489	0	0
G. Sprake, Weston-super-Mare	2,483	9	7
G. & J. E. Stokes, Weston-super-Mare	2,340	0	0
C. & E. Stradling,* Weston-super-Mare	2,197	17	0

* Accepted.

Current Market Prices.

		£	s.	d.	£	s.	d.
FORAGE.							
Beans	per qr.	1	14	0	2	0	0
Clover, best	per load	4	0	0	4	7	6
Hay, good	do.	3	12	6	4	0	0
Sainfoin mixture	do.	3	12	6	4	2	6
Straw	do.	1	10	0	2	0	0

		£	s.	d.	£	s.	d.
OILS AND PAINTS.							
Castor Oil, French	per cwt.	1	0	5	—	—	—
Colza Oil, English	do.	1	3	6	—	—	—
Copperas	per ton	2	0	0	—	—	—
Lard Oil	per cwt.	2	15	0	2	17	0
Lead, white, ground, carbamate	do.	1	4	10	—	—	—
Do. red	do.	1	0	4½	—	—	—
Linseed Oil, barrels	do.	0	15	9	—	—	—
Petroleum, American	per gal.	0	7	0	0	7½	—
Do. Russian	do.	0	0	5½	0	0	6½
Pitch	per barrel	0	8	0	—	—	—
Shellac, orange	per cwt.	10	4	0	10	9	0
Soda, crystals	per ton	3	2	6	3	5	0
Tallow, Town	per cwt.	1	6	6	1	6	0
Tar, Stockholm	per barrel	1	2	0	—	—	—
Turpentine	per cwt.	2	2	6	—	—	—

		£	s.	d.	£	s.	d.
METALS.							
Copper, sheet, strong	per ton	72	0	0	—	—	—
Iron, Stafs, bar	do.	6	0	0	8	10	0
Do. Galvanised Corrugated sheet	do.	10	5	0	10	10	0
Lead, pig, Soft Foreign	do.	12	7	6	—	—	—
Do. do. English common brands	do.	12	12	6	12	15	0
Do. sheet English galb. per sq. ft. and upwards	do.	14	0	0	—	—	—
Do. pipe	do.	15	0	0	—	—	—
Nails, cut, 3 in. to 6 in.	do.	9	5	0	—	—	—
Do. floor brass	do.	9	0	0	—	—	—
Steel, Stafs., Girders and Angles	do.	5	10	0	6	5	0
Do. do. Mild bars	do.	6	0	0	6	5	0
Tin, Foreign	do.	127	15	0	128	5	0
Do. English ingots	do.	129	10	0	132	0	0
Zinc, sheets, Silesian	do.	24	10	0	—	—	—
Do. do. Vielle Montaigne	do.	24	10	0	—	—	—
Do. Spelter	do.	22	0	0	22	5	0

TIMBER.							
SOFT WOODS.							
Fir, Dantzic and Memel	per load	1	13	0	3	0	0
Pine, Quebec, Yellow ..	do.	5	5	0	6	5	0
Do. Pitch ..	do.	2	5	0	3	0	0
Laths, log, Dantzic ..	per fath.	4	10	0	5	10	0
Do. Norrköping ..	per bundle	0	0	7½	—	—	—
Deals, Galatz, White, 1st	do.	7	15	0	—	—	—
Do. 2nd, 3 x 11	per std.	7	15	0	—	—	—
Do. Biscan, Spruce, 1st,	do.	12	5	0	—	—	—
Do. St. Petersburg, Yell.,	do.	11	10	0	—	—	—
Do. Lewisport, Yellow	do.	11	10	0	—	—	—
Pine, 1st, 3 x 10	do.	19	0	0	—	—	—
Do. do. do. 3 x 9	do.	18	15	0	—	—	—
Do. do. do. 3 x 8	do.	17	10	0	—	—	—
Do. do. do. 3rd, 3 x 11	do.	9	10	0	—	—	—
Do. do. do. 3 x 10	do.	8	10	0	—	—	—
Do. do. do. 3 x 9	do.	8	10	0	—	—	—
Do. Marsouis Bright	do.	8	10	0	—	—	—
Spruce, Unsorted,	do.	8	5	0	—	—	—
3 x 9 x 12ft.	do.	8	5	0	—	—	—
Do. Quebec Spruce, 1st,	do.	11	0	0	—	—	—
Do. do. do. 2nd, 3 x 9	do.	9	15	0	—	—	—
Do. do. Bright Yellow	do.	11	5	0	—	—	—
Pine, 3rd	do.	11	15	0	—	—	—
Do. do. do. do. 3 x 11	do.	6	5	0	12	5	0
Battens, all kinds ..	do.	6	10	0	9	15	0
Scantlings ..	do.	6	10	0	9	15	0
Flooring Boards rin. pre-	do.	0	8	9	0	12	6
pared, 1st ..	per square	0	8	9	0	12	6
Do. 2nd ..	do.	0	8	3	0	9	9
Do. 3rd, &c. ..	do.	0	7	0	0	10	6

Complete List of Contracis Open.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
BUILDING:			
Mar. 31	Doneraile, co. Cork—Addition to Bank	National Bank, Ltd.	B. E. F. Sheehy, 57 George Street, Limerick.
" 31	Kinsale, Ireland—Church Works	—	W. H. Hill & Son, 28 South Mall, Cork.
" 31	Swinton, Yorks—Alteration of Chapel	—	S. Oliver, 44 White Lee Road, Swinton.
" 31	Smethwick—Cement and Lime	Corporation	C. J. F. Allin, Borough Surveyor, Town Hall, Smethwick.
" 31	Belfast—Church	—	J. J. Phillips & Son, 61 Royal Avenue, Belfast.
" 31	Whitehead—Church	—	J. J. Phillips & Son, 61 Royal Avenue, Belfast.
" 31	Rossett, Denbighshire—House, &c.	County Council	R. L. Williams, County Surveyor, Denbigh.
" 31	Carlisle—Bridge, &c.	Rural District Committee	J. Graham, Engineer, Bank Chambers, Bank Street, Carlisle.
" 31	Bargoed, Wales—Converting, &c.	E. R. Bowen	P. V. Jones, Architect, Bargoed.
" 31	Coedpoeth, Wales—Library	—	—
" 31	Honley, near Huddersfield—Villa	Bersham Parish Council	—
" 31	Salford—Retort-House Floor	Gas Committee	Lunn & Kaye, Architects, Milnsbridge.
" 31	Tipton—Fireclay Goods	Gas Committee	W. W. Woodward, Engineer, Gas Offices, Bloom Street, Salford.
" 31	Crofton—Pair of Villas	W. A. Simmel	S. O. Stephenson, Engineer, Gasworks, Tipton.
April 1	Drummoak, Scotland—Alterations, &c., to Offices	—	R. T. Longden, Architect, Moorland Road, Burslem.
" 1	Waterford, Hertford—Bridge Repairs	Rural District Council	J. Philip, Carpenter, Saw Mill, Drummoak.
" 2	Great Horton, Bradford—Club Premises	Working Men's Club	J. W. Riggs, St. Elmo, Fanshawe Street, Bengoe, Hereford.
" 2	Urmston, Lancs—Church	—	S. Spencer, Architect, Old Bank Chambers, Great Horton, Bradford.
" 2	Aberavon—House	E. E. Bevan	J. J. Green, 19 South John Street, Liverpool.
" 2	Burnley—Cookery Room	Corporation	J. C. Rees, Architect, Neath.
" 2	Lumphanan, Scotland—House	—	Borough Surveyor, Town Hall, Burnley.
" 2	Penygroes, Wales—Buildings	Local Governing Body	Cochran & Macpherson, 154 Union Street, Aberdeen.
" 2	Skewen, Wales—Library	Coedfranc Parish Council	R. L. Jones, County Architect, Penygroes, Wales.
" 4	Greenacastle, Ireland—Creamery	Greenacastle Co-operative Agricultural & Dairy Soc., Ltd.	J. C. Rees, Architect, Neath.
" 4	Kilgerran, Pembrokeshire—House, &c.	—	Secretary, Greenacastle C. A. & D. S., Ltd., Newtownstewart.
" 5	Stretford and Levenshulme—Twenty-six Houses	Co-operative Society	Mrs. Griffiths, Corner House, High Street, Kilgerran.
" 3	Abercarn—School	Baptist Church Trustees	Secretary, Society's Offices, Downing St., Ardwick, Manchester.
" 6	Trezeah—Church	—	R. L. Roberts, Architect, Abercarn.
" 6	Lurgan—Thirty Labourers' Cottages	Rural District Council	O. Caldwell, Architect, Victoria Square, Penzance.
" 6	Aylesbury—Offices	Bucks County Council	W. J. Corner, Clerk, Union Workhouse, Lurgan.
" 6	Brussels—Buildings	—	R. J. Thomas, County Surveyor, County Hall, Aylesbury.
" 6	Cork—Reconstructing	—	M. l'Ingénieur en chef De Schryver, rue du Canal, 53 Bruxelles.
" 6	Kinglassie, Scotland—Extension to Cemetery	Parish Council	W. H. Hill & Son, 28 South Mall, Cork.
" 7	Kendal—Additions, &c.	W. H. Somervell	W. Birrell, 200 High Street, Kirkcaldy.
" 7	Stepney—Electricity Generating Station	Borough Council	J. F. Curwen, 26 Highgate, Kendal.
" 7	Hove—Church and Schools	—	M. W. W. Jameson, 15 Alle Street, Whitechapel, E.
" 7	Rosculdin—Chapel	—	E. J. Hamilton, 2 New Road, Brighton.
" 8	Walthamstow—Electricity Generating Station	Urban District Council	E. A. Coombe, Forthleven.
" 8	Selly Oak, near Birmingham—Depôt, &c.	King's Norton and Northfield Urban District Council	G. W. Holmes, Engineer, Town Hall, Walthamstow.
" 8	Sheffield—Crematorium	—	A. W. Cross, 23 Valentine Road, King's Heath.
" 9	London, W.—Lime, Cement, Bricks, &c.	Burial Grounds Sub-Committee	C. Hadfield, Architect, Cairns Chambers, St. James St., Sheffield.
" 11	Limerick—Library	Paddington Borough Council	Borough Surveyor, Town Hall, Paddington, W.
" 12	London, S.W.—Building Materials (Two Contracts)	Trustees	G. P. Sheridan, 25 Suffolk Street, Dublin.
" 12	Homerton, N.E.—Laundry Buildings	Prison Commissioners	Prison Department, Home Office, Whitehall, S.W.
" 12	Barnes—Wall	Metropolitan Asylums Board	W. T. Hatch, Engineer, Board's Offices, Embankment, E.C.
" 12	—	Urban District Council	G. B. Toms, Surveyor, Council Offices, High Street, Mortlake.
ENGINEERING:			
Mar. 31	Walton-le-Dale, Lancs—Watermain	Urban District Council	F. E. Dixon, 49 Lune Street, Preston.
" 31	Sunderland—Cables	Corporation	J. F. C. Snell, Borough Electrical Engineer, Town Hall, Sunderland.
" 31	Islington—Washing Machine	Guardians	E. Davey, Clerk, Guardians' Offices, St. John's Road, Upper Holloway, N.
" 31	Swindon—Electrical Plant	Corporation	J. G. Griffin, Engineer, Electricity Works, Swindon.
" 31	Aberdeen—Boilers, &c.	Electric Lighting Committee	J. A. Bell, City Electrical Engineer, Millburn Street, Aberdeen.
" 31	Anstruther, Scotland—Quay Wall	Harbour Commissioners	R. Henderson, 5 High Street, Burntisland.
" 31	Conway, Wales—Sewerage and Waterworks	Rural District Council	T. B. Farrington, Engineer, Trinity Square, Llandudno.
April 1	Bodmin—Two Bridges	Rural District Council	J. Pethybridge, Clerk, Mountfollly, Bodmin.
" 2	Montrose, Scotland—Repair of Jetty	Harbour Trustees	W. Ross, 10 Castle Street, Montrose.
" 2	Reading—Tramcars, &c.	Corporation	W. Binns, Engineer, Tramways Office, Mill Lane, Reading.
" 2	Swansea—Arc Lamps, &c.	Corporation	C. A. L. Prusmann, Borough Electrical Engineer, Swansea.
" 2	Edinburgh—Drain Pipe	—	R. Morham, City Architect, Edinburgh.
" 4	Greenacastle, Ireland—Well	Greenacastle Co-op. Agricultural and Dairy Soc., Ltd.	Secretary, D.C.A. and B.S., Ltd., Greenacastle, Newtownstewart.
" 5	Withington, Lancs—Electric Bed Lift	Guardians	J. B. Broadbent, 15 Cooper Street, Manchester.
" 6	Pontyglazier, St. Dogmells, Cardiganshire—Bridge	Rural District Council	A. H. Thomas, Architect, County Surveyor's Office, Haverfordwest.
" 7	Manchester—Generators, &c.	Electricity Committee	F. E. Hughes, Secretary, Electricity Dept., Town Hall, Manchester.
" 7	Derby—Sewerage Works	Corporation	J. Mansergh & Sons, 5 Victoria Street, Westminster.
" 9	Natal, South Africa—Electric Telpheage	Government of Natal	Sir Walter Peace, 26 Victoria Street, Westminster, S.W.
" 9	Harrogate—Waterworks	Corporation	E. W. Dixon, 14 Albert Street, Harrogate.
" 9	Malaga, Spain—Tramway Concession	—	Secretariat of the Ayuntamiento, Office of Public Works, Malaga.
" 11	Glasgow—Renewal of Bridge Superstructure	Caledonian Railway Co.	J. Blackburn, 302 Buchanan Street, Glasgow.
" 11	Waterford, Ireland—Bridges	County Council	R. G. Paul, Secretary, County Council, Dungarvan.
" 11	Burnley—Reservoir, Laying Pipes, &c.	Rural District Council	S. Edmundson, 18 Nicholas Street, Burnley.
" 12	India Office, S.W.—Locomotives	—	Director-General of Stores, India Office, Whitehall, S.W.
" 12	Homerton, N.E.—Alterations to Engineering Arrangements	Metropolitan Asylums Board	W. T. Hatch, Engineer, Board's Offices, Embankment, E.C.
" 15	Cavan, Ireland—Road Roller	County Council	W. Finlay, Secretary, Cavan County Council, Court House, Cavan.
" 18	Belfast—Engines, &c.	Harbour Commissioners	G. F. L. Giles, Harbour Engineer, Belfast.
" 18	London, S.W.—Switchboards	Westminster Electric Supply Corporation, Ltd.	Kennedy and Jenkin, 17 Victoria Street, Westminster, S.W.
" 25	Pietermaritzburg, Natal—Coaling Plant	Government of Natal	Agent-General for Natal, 26 Victoria Street, Westminster, S.W.
FURNITURE:			
April 6	London, N.W.—Furnishing	Willesden U.D.C.	S. W. Ball, Clerk, Public Offices, Kilburn, N.W.
IRON AND STEEL:			
Mar. 31	Warrington—Ironmongery	Gas Committee	W. S. Haddock, Gas Office, Mersey Street, Warrington.
" 31	Barking—Pipes, &c.	Gas Company	W. B. Reide, Gasworks, Barking.
" 31	Devonport—Pipes, &c.	Gas Committee	S. E. Stevenson, Engineer, Gasworks, Devonport.
April 4	Manchester—Railway Stores	Lancashire and Yorkshire Railway Co.	Mr. Duffin, Stores Dept., Osborne Street, Manchester.
" 6	Sunderland—Iron and Steel	Corporation	Borough Engineer, Town Hall, Fawcett Street, Sunderland.
" 6	Leeds—Iron and Steel	Tramways Committee	J. B. Hamilton, General Manager, Tramways Office, City Sq., Leeds.
" 9	London, W.—Iron and Steel	Paddington Borough Council	Borough Surveyor, Town Hall, Paddington, W.
" 11	Burnley—Pipes	Rural District Council	S. Edmondson, 18 Nicholas Street, Burnley.
" 13	Adelaide, Australia—Railway Stores	—	Agent-General for South Australia, London.
PAINTING AND PLUMBING:			
April 4	Guildford—Painting, &c.	Town Council	C. G. Mason, Borough Surveyor, Tunsgate, Guildford.
" 6	Blackpool—Oils, Paints, &c.	Highways Committee	J. S. Brodie, Borough Surveyor, Town Hall, Blackpool.
" 6	Leeds—Paints and Varnishes	Tramways Committee	J. B. Hamilton, General Manager, Tramways Office, City Sq., Leeds.
" 6	Sunderland—Oil, Paints, Varnishes, &c.	Corporation	Borough Engineer, Town Hall, Fawcett Street, Sunderland.
" 9	London, W.—Painting Materials	Paddington Borough Council	Borough Surveyor, Town Hall, Paddington, W.
" 11	Fulham—Painting, &c.	Borough Council	F. Wood, Borough Engineer, Fulham, S.W.
" 12	Watford, Herts—Painting, &c., at Asylum	Metropolitan Asylums Board	W. T. Hatch, Engineer, Board's Offices, Embankment, E.C.
" 12	South Tottenham—Painting, &c., at Hospital	Metropolitan Asylums Board	W. T. Hatch, Engineer, Board's Offices, Embankment, E.C.
ROADS AND CARTAGE:			
Mar. 31	Normanton, Yorks—Materials	Urban District Council	A. Hartley, Architect, Castleford.
" 31	Biester—Highway Repairs	Urban District Council	H. J. Gibbons, Launton Road, Biester.
" 31	Storrington, Sussex—Material and Cartage	Thakeham R.D.C.	A. Flowers, Clerk, Storrington, Pulborough.
" 31	Smethwick—Materials	Corporation	C. J. F. Allin, Borough Surveyor, Town Hall, Smethwick.
" 31	Leeds—Tar Macadam	Corporation	City Engineer, Leeds.

Complete List of Contracts Open—continued.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
ROADS AND CARTAGE—cont.			
Mar. 31	Prestwich, Manchester—Materials	Urban District Council	W. Nutall, Surveyor, Chester Bank, Prestwich.
" 31	Slough—Making-up	Urban District Council	Surveyor, 1 Mackenzie Street, Slough.
" 31	Warrington—Materials	Gas Committee	W. S. Haddock, Gas Office, Mersey Street, Warrington.
April 1	Hemsworth, Yorks—Roadmaking	Rural District Council	T. H. Richardson, Hemsworth.
" 2	Great Harwood, Lancs—Materials	Urban District Council	A. H. Dunkin, Surveyor, Great Harwood, Lancs.
" 2	Pocklington, Yorks—Stone and Slag	Rural District Council	T. Robson, Clerk, Pocklington.
" 2	Stafford—Road Metal, &c.	County Council	J. Moncur, Chief Surveyor, County Buildings, Stafford.
" 2	Sandwich—Materials	Corporation	A. J. Firby, Borough Surveyor, Sandwich.
" 2	Walkden, Lancs—Materials	Worsley U.D.C.	J. A. Corson, District Offices, Hilton Lane, Walkden.
" 4	Shipley, Yorks—Setts	Urban District Council	W. H. Dawson, Surveyor, Shipley, Yorks.
" 4	Uttoxeter, Staffs—Materials, &c.	Rural District Council	J. Preston, Surveyor, Woodlands, Uttoxeter.
" 4	Epsom—Materials, &c.	Rural District Council	T. E. Ware, Surveyor, Waterloo Road, Epsom.
" 5	Mansfield—Street Improvements .. .. .	.. .. .	R. F. Vallance, Borough Surveyor, Mansfield.
" 5	Sevenoaks—Raising Road	Rural District Council	W. H. Bolt, Surveyor's Office, Leigh, Tonbridge.
" 5	Sidcup, Kent—Granite Kerb, &c.	Foots Cray U.D.C.	W. A. Farnham, Surveyor, Council Offices, High Street, Sidcup.
" 5	Withington, Lancs—Road Works	Urban District Council	A. H. Mountain, Surveyor, Town Hall, West Didsbury.
" 5	Beckenham—Making-up	Urban District Council	J. A. Angell, Surveyor, Beckenham.
" 5	Sunderland—Levelling, &c.	Corporation	Borough Surveyor, Town Hall, Sunderland.
" 6	Middleton, Lancs—Road Materials	Corporation	W. Welburn, Borough Surveyor, Middleton, Lancs.
" 6	Grays, Essex—Making-up, &c. .. .. .	.. .. .	G. W. Cobham, 1 Edwin Street, Gravesend.
" 6	Leeds—Paving, &c.	Corporation	City Engineer's Office, Municipal Buildings, Leeds.
" 6	Woodhall Spa, Lincs—Granite	Urban District Council	J. E. Chatterton, Clerk, Church Lane, Horncastle.
" 6	Smethwick—Road Materials, &c.	Highways Committee	J. S. Brodie, Borough Surveyor, Town Hall, Blackpool.
" 6	Swinton, Lancs—Materials	Urban District Council	H. Entwistle, Surveyor, Council Offices, Swinton.
" 8	Midsomer Norton, Somerset—Materials, &c.	Urban District Council	Surveyor, Midsomer Norton.
" 9	London, W.—Materials	Paddington Borough Council	Borough Surveyor, Town Hall, Paddington, W.
" 11	Magor, Mon.—Metalling	Rural District Council	J. Thomas, Clerk, Union Offices, Queen's Hill, Newport, Mon.
" 11	St. Mellons, near Cardiff—Metalling	Rural District Council	Union Offices, Queen's Hill, Newport, Mon.
SANITARY:			
Mar. 31	Chelmsford—Sewer, &c.	Rural District Council	J. Dewhurst, Surveyor, Avenue Chambers, Chelmsford.
" 31	Warrington—Lime	Gas Committee	W. S. Haddock, Gas Office, Mersey Street, Warrington.
" 31	Chailey, Sussex—Sewerage Works	Rural District Council	Powell & Co., Estate Offices, Lewes.
" 31	Smethwick—Earthenware Pipes	Corporation	C. J. F. Allin, Borough Surveyor, Town Hall, Smethwick.
April 2	Great Harwood, Lancs—Earthenware Pipes, &c.	Urban District Council	A. H. Dunkin, Surveyor, Great Harwood, Lancs.
" 4	Keighley—Sewer	Rural District Council	T. Burton, 6 Park Terrace, Keighley.
" 4	Sutton-in-Ashfield—Sewerage Works	Urban District Council	Beesley, Son & Nichols, 11 Victoria Street, Westminster, S.W.
" 5	Worcester—Sewage-Disposal Works	Corporation	T. Calkin, City Engineer, Guildhall, Worcester.
" 6	Llantwit Fardre, Wales—Sewerage Works	Rural District Council	G. S. Morgan, Engineer, School Street, Pontyclun.
" 6	Blackpool—Earthenware Pipes	Highways Committee	J. S. Brodie, Borough Surveyor, Town Hall, Blackpool.
" 6	Swinton, Lancs—Sewage Precipitants	Urban District Council	H. Entwistle, Surveyor, Council Offices, Swinton.
" 9	London, W.—Disinfectants	Paddington Borough Council	Borough Surveyor, Town Hall, Paddington, W.
" 11	London, N.—Sewers, &c.	Hornsey Town Council	E. J. Lovegrove, Borough Surveyor, Southwood Lane, Highgate, N.
" 12	Ivybridge, Devon—Sewerage Works	Urban District Council	Cameron, Commin & Martin, 1 Victoria Street, Westminster.
TIMBER:			
Mar. 31	Warrington—Timber	Gas Committee	W. S. Haddock, Gas Office, Mersey Street, Warrington.
April 5	Kingston-on-Thames—Timber	Guardians	J. Edgell, Clerk, Union Offices, Coombe Road, Kingston-on-Thames.
" 6	Blackpool—Timber	Highways Committee	J. S. Brodie, Borough Surveyor, Town Hall, Blackpool.
" 6	Sunderland—Timber	Corporation	Borough Engineer, Town Hall, Fawcett Street, Sunderland.
" 9	London, W.—Timber	Paddington Borough Council	Borough Surveyor, Town Hall, Paddington, W.

List of Competitions Open.

DATE OF DELIVERY.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	DEPOSIT REQUIRED FOR CONDITIONS, &c.	BY WHOM ADVERTISED.
Mar. 31	Tipton—Free Library Buildings and Town Hall ..	£50, £20, £10.	£2 2s.	J. W. Waring, Clerk, Public Offices, Owen Street, Tipton.
" 31	St. Helens—Two Branch Public Libraries ..	£20, £40.	£1 1s.	W. H. Andrew, Town Clerk, Town Hall, St. Helens.
" 31	Vienna—Machinery to Lift Boats on Canal ..	100,000, 75,000 & 50,000 Kronen.	—	Austro-Hungarian Consulate-General, 22 Laurence Pountney Lane, E.C.
April 5	Birmingham—Three Public Libraries ..	—	£1 1s.	A. W. Cross, 23 Valatine Road, King's Heath, near Birmingham.
" 6	Lurgan, Ireland—Thirty Labourers' Cottages ..	—	—	W. J. Corner, Clerk to R.D.C. Workhouse, Lurgan.
" 6	Perth—Hospital	£31 10s., £21, £10 10s.	—	J. Begg, Town Clerk, Perth.
" 8	Malvern—Library	£30, £20, £10.	10s. 6d.	H. L. Whatley, Clerk, Council Offices, Malvern.
" 9	Calne, Wilts—Library	—	—	G. I. Gough, Town Clerk's Office, Calne.
" 23	Llandilo, Wales—Drainage Scheme	—	—	E. Jones, Glancennan, Llandilo.
" 30	Newcastle-upon-Tyne—Grammar School ..	£100, £50, £25.	£1 1s.	H. J. Criddle, 2 Collingwood Street, Newcastle-upon-Tyne.
May 9	Barnet—Hospital	£25, £15, £10.	£1 1s.	C. D. Byfield, 16 High Street, Barnet.
" 31	Stamford, Lincs—Public Library	—	—	C. Atter, Town Clerk, Town Hall, Stamford.

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white lead paint.

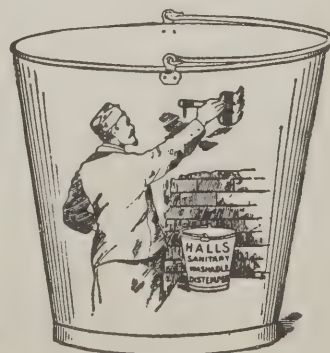
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If you are overwatchful for results and not zealous enough in sowing, you cannot expect to reap the reward which is the heritage of the alert business man.

Appointments Wanted.

The charge for Advertisements under this heading is 1s. 6d. per insertion not exceeding four lines, and 6d. per line afterward, prepaid. Three insertions may be had for the price of two. Advertisements must reach the Office not later than 5 o'clock on Thursday (31st).

A good capable JOINER of experience WANTS WORK.—A. S., 134, Grove Green Road, Leytonstone, N.E. 302

ARCHITECT & SURVEYOR'S ASSISTANT, 22, experienced and capable all duties, artistic draughtsman, see my Register No. 167, desires APPOINTMENT, view of Partnership, excellent prospects.—Box 291, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

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ARCHITECT AND SURVEYOR'S JUNIOR desires re-engagement. Good at planning, neat draughtsman, quantities, &c., good reference.—STRACHAN, 112, Kelmscott Road, S.W. 283

ARCHITECT & SURVEYOR'S JUNIOR ASSISTANT seeks re-engagement. Experience in planning, details, designs from sketches, perspectives, quantities, levelling and surveying, neat draughtsman; Prob. R.I.B.A.; mod. salary.—Address, W. HELM, Victoria Road, Woolston, Hants. 276

ARCHITECT'S ASSISTANT desires engagement. Tracings, photo copies, and drawing. Evening work accepted.—G. QUINLAN, 19, Forthbridge Road, Clapham Common, S.W. 281

ARCHITECT'S ASSISTANT, good experience, requires ENGAGEMENT; contract drawings, details, surveying assistance with quantities, &c.—Box 290, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

ARCHITECT'S ASSISTANT requires engagement; 15 years' experience in well-known London office. Moderate salary.—Box 287, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

ARCHITECT'S CHIEF ASSISTANT; designs, working drawings, and details. English and American experience.—First-class references.—Box 298, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

ARCHITECT'S JUNIOR ASSISTANT desires engagement, 3 years' London experience, well up in office routine; moderate salary.—A. C., 34, Great James Street, W.C. 273

ARCHITECT'S JUNIOR ASSISTANT (19), 5½ yrs. experience, good draughtsman, general experience.—R. P., 79, Woodville Road, Cathays, Cardiff. 299

ARCHITECT'S SENIOR ASSISTANT requires RE-ENGAGEMENT. Thirteen years' good general experience. Oxford and London. Excellent references. Moderate salary.—H. W. HORSLEY, 24, Hillsborough Road, Dulwich Grove, S.E. 303

AS CLERK OF WORKS, thoroughly practical in Brick, Stone, Sanitary matters, structural steel work, and concrete. Good references and testimonials.—Box 286, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

AS SURVEYOR'S ASSISTANT, practical knowledge of building and repairs, good draughtsman, preparation of plans of buildings, roads, sewers, &c. Levelling, supervision.—J. G., 24, Titchborne Street, Edgware Road, W. 264

BUILDER'S CLERK, age 24, DESIRES CHANGE, 7 years' experience, well up in all branches various trades, also plans, quantities, measuring up, management, office routine, correspondence, &c. Excellent references. Abstainer.—Box 285, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

BUILDER'S CLERK (30) well up in book-keeping, time-sheets, and general routine. Early riser and abstainer. Thirteen years' experience.—A. J. K., Box 279, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

BUILDER & CONTRACTOR'S ASSISTANT seeks RE-ENGAGEMENT. Eighteen years experience, quantities, drawing, surveying, levelling, &c. Good references.—Address G., 71, Gertrude Road, West Bridgford, Nottingham. 288

CARPENTER, 40, Good Drawing, Measuring, Quantities, wants change. Long, good references. Abstainer. London.—Box 275, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

CLERK OF WORKS disengaged. Town or country. Experienced, practical, reliable. Well up in all branches. Plans, measurements, quantities, details. Good references.—P., 84, Warner Road, Camberwell. 296

DECORATING and PAPERHANGING WANTED.—Good Work, any quantity and any distance.—R. T. ELEY, 49, Barrett's Grove, Stoke Newington, N. 254

DRAUGHTSMAN, 6 years experience, desires evening work. Perspectives, Inking-in Working or Competition Drawings, Tracings, &c.—P. R. WALKER, 71, Aytoun Road, Brixton, S.W. 304

ESTIMATING.—An experienced Builder's Estimator will be pleased to price Bills of Quantities for Builders, moderate charges.—Apply, T. G. P., Box 232, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

GANGER Disengaged, thoroughly understands excavating, concreting, and drain work; good references.—J. A., 90, North Road, Southend-on-Sea. 259

GENERAL FOREMAN disengaged. Town or Country. Thoroughly practical, energetic, reliable, an good manager of men. Just finished large contract. First-class Testimonials.—Address, W. R., Ivy Road, Cricklewood, N.W. 282

GENERAL or Working Foreman disengaged, Carpenter and Joiner by Trade; good manager of men. Good references from late employer.—W. B., 79, St. Albans Avenue, Bedford Park, S.W. 292

IRONMONGER (Builder's), disengaged, qualified for buying for large builder's office, drawing and photography, excellent refs.—J. T. G., 16, Piershill Place, Edinburgh. 266

JOINER.—Young, seeks Employment to assist shop foreman. Thorough knowledge of the trade, neat draughtsman, certificated in building construction, good refs.—A. P. H., 12, Waterloo Villa, Harefield, Middlesex. 278

LETTER CUTTER and CARVER wants JOB, in London or suburbs. Good references. Could fill up time in office.—Apply J. DAY, 100, South Street, Bishop's Stortford. 293

MACHINIST (27), wants job, over and under saw bench, any planers, fourcutter; improver on spindle. Had charge small plant; town or country, 9d.—MACHINIST, 28, Blackhorse Road, Walthamstow. 269

P.A.S.I. (25) desires Engagement in Building Surveyor's Office, 3½ years' experience. Well up in construction, sanitary science, surveying and levelling, knowledge of architecture and quantities; neat draughtsman; £1 week; references.—G. L. H., 7, Streatham Place, Streatham Hill, S.W. 272

PLUMBER, GAS, and HOT WATER FITTER, well up in all branches, also zinc work London and country experience; references.—E. G., 76, Wharton Road, West Kensington Park, W. 249

PLUMBING, GAS, and Hot Water Work required in town or country; labour and materials. Address, R. C. F. WYATT, Plumber and Sanitary Engineer, Maisonetie, 11, Holland Street, Brixton, S.W. 271

SURVEYOR'S ASSISTANT desires ENGAGEMENT as Improver. Three years with London Architect and Surveyor. Salary 25s.—13, Compton Road, Canonbury, N. 301

TO LARGE EMPLOYERS OF LABOUR. THE NATIONAL ASSOCIATION for RESERVE SOLDIERS, 119, Victoria Street, S.W., tel. 367, Westminster, telegrams, "Employsos," London, supplies men of good character only, as Porters, Labourers, Caretakers, Carmen, Night Watchmen, Timekeepers, Carpenters, Masons, Bricklayers, Navvies, Handy Men, &c. Characters up to date. No fees.—Apply SECRETARY, as above.

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ARCHITECT, with Provincial and London business, wants ASSISTANT for London Office, with view to Partnership, also PUPIL. Premium.—Box 284, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

CLERK OF WORKS.—The Chorlton and Manchester Joint Asylum Committee invite applications for the post of Clerk of Works in connection with their Epileptic Colony at Langho near Blackburn; Salary £4 4s. od. per week. Applicants must be thoroughly experienced and the person appointed will be required to reside in the vicinity of the Works. Applications, stating previous experience and accompanied by copies of testimonials of recent date, must be sent to me before the 6th day of April, 1904, endorsed "Clerk of Works."

By order,
HENRY WOODHOUSE,
Chorlton Union Offices, Clerk to the Joint Committee.
All Saints, Manchester.
8th March, 1904.

CLERK WANTED for Contractor's Office, must be thoroughly experienced in Builder's book-keeping and accounts.—Apply with copies of recent testimonials, and giving salary required, to THOMAS GODWIN, Builder and Contractor, Hanley, Staffordshire.

WANTED, in a Woodworking shop in a small country town, a CLERK who understands the system of book-keeping in the matter of prime costs.—Address all applications in the first instance to CAXTON, c/o Haddon's Advertising Offices, Salisbury Square, E.C.

WORKING SHOP FOREMAN of Joiners WANTED. Must be well up in details, management of men; sober and industrious, and accustomed to machinery. Send reference from last employer, and state age and wages required.—GIBSON, Builder, High Wycombe.

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VENETIAN BLINDS. Complete from 4s. 8d. Any colour. Carriage paid. Art Lace, Spring, and Shop Blinds equally cheap. Price List and samples free.—E. J. SMITH, Blind Maker, 45, Grosvenor Park, Camberwell, London, S.E. (Please mention this paper.)

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AN ARCHITECT in one of the old City Inns wishes to let a portion of his offices on ground floor to a young architect with a view to future partnership; rent moderate inclusive.—Box 253, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

ARCHITECTS' special attention is called to the FURNACE QUARRY HARD BLUE SANDSTONE, which has been very largely used with splendid results; best weatherstone obtainable.—Apply GEO. MERCER, Llanelly, South Wales.

ARCHITECT wishes to let his flat furnished for 3 months or more. Architectural library, &c. One large sitting, 2 good bedrooms, bath, kitchen, &c.; suit two bachelors; rent 25s.; daily servant could be left.—Apply THE PORTER, Esmond Gardens, Bedford Park, W.

CLINKER FOR SALE, washed and graded for Bacteria Beds; any quantity; about 15. 8d. per cubic yard. Large stocks on hand. Also slag and concrete goods.—Apply WAKE & HOLLIS, LTD., Collingwood Buildings, Newcastle-on-Tyne.

FOR SALE, a COLOURED PLAN of the Cities of London and Westminster, 34 in. by 16 in.; in good condition, mounted on linen, published by J. Wallis, 1799. Price £3 3s.—Letters to Advertiser, care of G. Crump, 95, Grove Green Road, Leytonstone, N.E.

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MARBLE, GRANITE, STONework. Supplied to Architects and Builders. Send for Builders' Price List and Quotations. Telephone 1159, Hampstead.—KELLY & Co., Kilburn, Mill Hill, N.W., etc.

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WIRE NAILS, Mixed, 8s. per cwt.; 28 lbs., 2s. 3d.; Screws, mixed, 28s. per cwt.; 28 lbs., 7s. 6d.; wire, cut, wrought and malleable nails, tacks, shoe nails, rivets, &c., wholesale prices.—MIDLAND NAIL WORKS, 25 and 26, Rea Street, Birmingham. (John Pyne, Proprietor.)

BUILDERS' JOURNAL

AND ARCHITECTURAL RECORD.

April 6, 1904. Vol. 19, No. 478.

6, Great New Street, Fetter Lane, E.C.

Summary.

Though large supplies of foreign timber are now brought to our ports, they are diminishing very rapidly and cannot long continue to arrive at anything like the present prices. When coal becomes too dear to be wasted in open fireplaces, Mr. H. J. Elwes, F.R.S., predicts we shall have to take to close brick stoves to heat our houses, and then such timber as birch and beech will have a value as firewood which they do not now possess. (Page 166.)

The late Mr. John Pethick, head of the well-known firm of Pethick Brothers, was seventy-six years of age. (Page 165.)

The famous lion of Chæronea, a colossal marble figure surmounting the tomb of the Thebans (B.C. 338), is proposed to be restored by the Greek Government. Colonel Mure spoke of it as being the most interesting sepulchre monument in Greece—perhaps in Europe. It is the only one dating from the better days of Hellas (with the exception perhaps of the tumulus of Marathon) the identity of which is beyond dispute. It is to be hoped that no attempt will be made to replace the missing portions with new stone wrought in imitation of the old work, still less to place the lion upon a pedestal copied from some ancient example, as proposed by Siegel. (Page 169.)

In 1776 dry brickwork was £5 period and stock brickwork in mortar £8, whilst in 1811 the rates were respectively £13 10s. and £17 13s.; during the same period stock bricks rose from about 20s. to 50s. per thousand; the cost of labour also increased to a large extent. This was due in great degree to the war in which England was then engaged. At the beginning of last century glass was very expensive, which probably accounts to some extent for the small windows then generally constructed in ordinary houses. (Page 160.)

Amended plans for the restoration of Waltham Abbey tower have been prepared and approved. They show the tower battlemented with turrets corresponding to the existing buttresses. (Page 165.)

Bradford Town Hall is to be extended at a cost of £70,000. The new building will be connected to the old by a spacious corridor. (Page 165.)

The plans for the Lyceum Music Hall have been approved. (Page 165.)

Permanent appointments at the Office of Works are made from time to time by competitive examination amongst candidates nominated almost exclusively from the temporary staff, with a salary which commences at £150 a year, rising by £10 annually to £300, with prospect of promotion to a higher class in which the salary rises to £400, and with possible further promotion, and a pension on retirement at sixty-five years of age of as many sixtieths of the salary then being earned as the assistant has been years on the permanent staff. (Page 168.)

Southwark Bridge. THE scheme for the reconstruction of Southwark Bridge, by lowering the crown and filling up the approaches, having now been abandoned by reason of the Select Committee's decision and the opposition raised by interested traders, one wonders what the Corporation will next propose. As it exists, the bridge is of very little use on account of the gradient of its approaches, but it ought nevertheless to form a valuable artery out of the City. The proposal for filling up the dip is evidently not likely to succeed, so that we expect the next scheme will be for a viaduct. This in fact would seem the only possible alternative—other than a new bridge.

The Malvern Competition. It is rather wearisome to have to chronicle yet another unsatisfactory competition. The Malvern Urban District Council has promoted one for a free library (premiums £30, £20 and £10), the designs for which must be delivered by April 8th. Mr. Henry T. Hare has been appointed assessor. The sum available for the work is £8,000, and out of this the conditions stipulate that £1,000 shall be set aside for preliminary and competition expenses, architect's fees, &c., and a further provision is directed for extra works. This reduces the amount available to, say, £6,700. For this the council requires:—A combined news and magazine room of 1,600 sq. ft.; a lending library of 1,600 sq. ft. on the open access system; a reference room of 1,400 sq. ft., librarian's room big enough for committee meetings; retiring room and lavatory for librarian and staff (as part of the staff are to be females this is not quite satisfactory), a large store, and a lecture hall to hold 200 people. All these must be placed on the ground floor. In addition, the following must be provided either on the ground or basement floors:—Boys' room, girls' room, another store for librarian's department, a bookbinder's room, room for heating apparatus and cellars. The floors are to be of concrete and wood blocks, and as the level of the site drops greatly from the main front to the rear this means rather more than at first appears. Further, either in combination with the library buildings or separate, there are to be residences for the librarian and a caretaker, and competitors must provide for all the fixtures, about 300ft. to 400ft. of fencing, electric light and gas installations, as well as the heating and ventilating apparatus, and drainage. If the Council expects to get all this for £6,700, it must be a very sanguine body. It is impossible to provide brick, or brick and stone, buildings of any artistic merit for such a sum, and this fact makes it fairly certain that all the designs will exceed the margin of cost. But

the Council appears to have anticipated this, for under clause 2 of the conditions it is stipulated that the premiated designs shall be tendered for by a builder in whom the Council has confidence, and if his tender exceeds the specified sum the Council will not be liable for more than half the amount of the premium. It is surprising that Mr. Hare passed such a monstrous condition, for if the Council is minded to behave dishonourably everything plays into its hands. It first sets an impossible task, and then penalises the unfortunate competitors for failure. We have no doubt that a number of intending competitors have been deterred from proceeding with a design by this condition, and they will naturally forfeit their deposit fee for the privilege of reading the ambitious schemes of the Malvern Council. Now on Thursday last, at the eleventh hour, the Council informs the depositors that at Mr. Hare's request it has withdrawn this obnoxious second clause, and that the successful competitor will get his premium in full in any case, and will have an opportunity of modifying his design if necessary. We cannot help thinking that Mr. Hare has been ill-advised in accepting the post of assessor for a competition in which, as his subsequent action shows, the conditions were distinctly and grossly unfair.

The Snobbish Assistant. WE may have our doubts about the amiability of Carlyle, whose character had much of the bear in it, and we may know that the gentle Tennyson of poetry was not the actual Tennyson who complained about hot-water cans and smells, while of such a vituperating genius as Whistler we may cherish many strange thoughts, and not a little thankfulness for never having been an occupant of his house—for all such there is the measure of their gifted nature to take into account but we have quite other feelings about that type of architect's assistant who, though palpably ignorant, affects snobbish manners towards those who visit his master's office. He cannot, of course, be bothered with business matters by ordinary business people: so that, as many men have experienced, it is far more difficult to get what one wants from him than from his principal. We would advise this young man to cool his swollen head, but to be careful in doing so, for it is a soft head and its vacuity might result in a sad collapse at any time. When he is a genius he can affect many idiosyncrasies, and the world will perhaps put up with a little irritability from him, but while he is no other than an ordinary architect's assistant, let him not forget that civility should be an excellent virtue in his calendar.

A CENTURY OF BUILDING PRICES.—III.

By T. E. COLEMAN, F.S.I.

(Continued from p. 144, No. 476.)

FOR the purpose of instituting a direct comparison between the prices agreed upon by the masters in 1810 and those proposed by the journeymen in the following year, we now give the same items as already quoted from the price-book issued by the Master Carpenters, but with the prices required by the workmen and published by them.

Prices of Carpenters' Work agreed upon by the Journeymen Carpenters in the Year 1811.

LABOUR ONLY.

ROOFING (per square).		Fixed.
	s. d.	
Common shed roofing not exceeding 12ft. high	- - -	5 0
Ditto, with purlins	- - -	6 0
Ditto, three storeys high	- - -	6 9
Single span roofing, including plates and ridges not exceeding 12ft. high	- - -	5 6
Ditto, three storeys high	- - -	6 3
Framed principals with beams, king-posts, purlins, braces and common rafters complete including plates	- 18	0
All ironwork to the aforesaid roofs per lb.	0	1

FLOORS (per square).

Single-framed floors trimmed to chimneys and well-holes	- - -	7 0
Framed floors with girders, binding, bridging and ceiling joists	- 18	6
Ground joists bedded (not framed)	- 4	0
Ditto pinned down on plates and framed to chimneys	- - -	5 6

QUARTER PARTITIONS (per square).

Common 4in.	- - -	5 4
Truss framed with king- and queen-posts	- - -	11 6

FIR TIMBERS (per ft. run).

Fir in bond and wood bricks	- - -	0 0 $\frac{1}{2}$
Ditto in templets, lintels, &c.	- - -	0 1 $\frac{1}{2}$
Planing fir, including squaring, &c. (per ft. super.)	- - -	0 2

BRACKETING (per ft. super.).

Bracketing, including plugging, to common cornices	- - -	0 5 $\frac{1}{2}$
--	-------	-------------------

CENTERING (per square).

Common centering to vaults	- - -	10 6
Ditto to apertures (per ft. run)	- - -	0 1 $\frac{1}{4}$

INCH DEAL (per ft. super.).

	From the bench.	Fixed.
	s. d.	s. d.
Rough	- - -	0 0 $\frac{3}{4}$
Wrought one side	- - 0	1 $\frac{1}{4}$ 0 2 $\frac{1}{4}$
Wrought both sides	- - 0	2 0 3

ROUGH BOARDING (per square).

2in. and 1in. deal	- - -	3 6
Ditto, edges shot	- 1	6 5 0
Ditto, ploughed and tongued	- - -	3 10 7 4
If any of the aforesaid are to ceilings, add per square	- - -	1 0
Rough weather-boarding	- - -	3 6

BATTEN FLOORS (per square).

1 $\frac{1}{2}$ in. common straight joint	- - -	14 0
Ditto tongued headings	- - -	16 0
Ditto and doweled	- - -	29 0
If any of the above floors are jacked to a thickness, add per square	- - -	1 0

SASH FRAMES (per ft. super.).

	From the bench.	Fixed.
	s. d.	s. d.
Deal cased frames, oak sunk sills for 1 $\frac{1}{2}$ in. sashes prepared to hang double	- 0 3 $\frac{1}{2}$	0 4 $\frac{1}{2}$
Ditto ditto for 2in. ditto	- 0 4 $\frac{1}{2}$	0 5
Plain solid deal frames, oak sunk sills, weathered, throated, rebated and beaded for French casements	- 0 4	0 5

SASHES (per ft. super.).

	From the bench.	Fixed.
	s. d.	s. d.
1 $\frac{1}{2}$ in. deal ovolo moulded sashes	- - 0 3 $\frac{1}{2}$	0 4
2in. ditto ditto	- - 0 4	0 4 $\frac{1}{2}$
2 $\frac{1}{2}$ in. ditto ditto	- - 0 5	0 5 $\frac{1}{2}$

DOOR LININGS (per ft. super.).

	d.	d.
1in. and 1 $\frac{1}{2}$ in. single rebated and beaded	- 3 $\frac{3}{4}$	4 $\frac{3}{4}$
Ditto double rebated and ditto	- 4 $\frac{3}{4}$	6

DOORS (per ft. super.).

	From the bench.	Fitted and hung.
	d.	d.
3in. and 1in. deal rough door	1 $\frac{1}{2}$	2 $\frac{1}{2}$
Ditto ploughed and tongued	2 $\frac{1}{4}$	2 $\frac{3}{4}$
Ditto wrought	2 $\frac{3}{4}$	3 $\frac{1}{4}$
Ditto ditto, ploughed, tongued and beaded	- 3 $\frac{1}{2}$	4
1 $\frac{1}{2}$ in. four panel square framed door	- 4	4 $\frac{3}{4}$
Ditto bead butt and square	- 5	5 $\frac{1}{4}$
Ditto moulded and square	- 5 $\frac{3}{4}$	6 $\frac{1}{2}$

If any of the three preceding items are 1 $\frac{1}{2}$ in., add 1in. framed and braced, and filled in with 1in. ploughed, tongued and beaded boarding - 7 8 $\frac{3}{4}$

Ditto ditto, with battens - 7 $\frac{1}{2}$ 9 $\frac{1}{4}$

2 $\frac{1}{2}$ in. ditto ditto - 8 $\frac{1}{4}$ 10 $\frac{3}{4}$

If the last-mentioned are framed with a wicket, add 1 $\frac{1}{4}$ th.

PREPARING FLOORING BOARDS.

	From the bench.
	d.
12ft. inch yellow deals	- 4 $\frac{3}{4}$
Add for each listing	- 1
12ft. inch and quarter yellow deals	- 5 $\frac{1}{4}$
Add for each listing	- 1
12ft. inch and quarter battens	- 3 $\frac{1}{2}$
Add for each listing	- 1

On comparing the labour values for carpenters' and joiners' work as determined at this period by the committee of master carpenters with those given by the journeymen, we find considerable variations in some of the items, more especially in the carpenters' work. For fixing roof and floor timbers, quarter partitions and centering the prices considered as equitable by the workmen average from 10 to 25 per cent. more than those of the masters, whilst for fixing rough boardings they are about 40 or 50 per cent. higher. Similar differences are seen in the rates for sashes and frames, but in the case of doors and gates the variations are comparatively slight.

In 1811 was published "Skyring's new and complete list of Builders' Prices; calculated to do justice to the proprietor, master builder, and their workmen. Price 5s. Dated March 25th, 1811. Printed by W. Smith and Co., 6, King Street, Seven Dials, London." Considered as a builders' price-book, a very successful endeavour appears to have been made to deal with the subject in a practical and comprehensive manner, for on examining the prices and their general arrangement we are immediately struck by the evident care with which the various items have been compiled in order to provide a reliable guide to current values in the metropolis. That Mr. Skyring possessed the courage of his opinions, and also confidence in his prices, is seen from the fact that at the end of the price-book the author states "as a proof of the equity of the prices, he will be happy to receive orders for any part of the work agreeably to the same, and support by dissected measurement, and solid and incontrovertible argument, any just claim for work done on the annexed plan. N.B. It is to be understood that the whole of the work is to be done in a sound, good, and workmanlike

manner; if *scamped* (a phrase well understood in the trade) it is impossible to fix a price without inspection." As a further safeguard, each copy of this price-book was separately numbered and signed by the author.

The following selection of items will give a good idea of the prices ruling at this period:—

Skyring's Builders' Prices for 1811.

EXCAVATOR'S WORK.

	All materials.	Labour only.
	s. d.	s. d.
Digging and throwing out in common foundations not exceeding 6ft. deep	-	-
per yd. cube.	1 0	0 9
Ditto and wheeling 100 yds.	-	-
ditto	2 6	1 9
Carting away ditto	5 0	-

BRICKLAYER'S WORK.

Note.—The author states that "these calculations are made from the prime cost of place bricks delivered at the job at 42s. per thousand, and 50s. for stocks—the average at this time."

	All materials.	Labour only.
	£ s. d.	£ s. d.
Place bricks laid dry in wells, &c. - per rod	13 10 0	1 15 0
Ditto all stocks ditto	15 12 0	1 15 0
Place bricks in party or internal walls in mortar - ditto	15 12 0	2 5 0
Ditto all stocks ditto	17 13 0	2 5 0
Ditto done in the best manner, picked for the outside and jointed, ditto	18 10 0	2 10 0
gin. brickwork laid in tarras and cross joints struck in 4in. per ft. super.	0 2 0	0 0 4

It is somewhat astonishing to notice that in the comparatively short space of thirty-five years the cost of brickwork appears to have more than doubled; for in 1776 dry brickwork is quoted at £5 and stock brickwork in mortar at £8 per rod, whilst in 1811 the rates are respectively £13 10s. and £17 13s. per rod. The price of gin. tarras brickwork had similarly increased from rod. to 2s. per ft. super. For some reason or other ordinary stock bricks had apparently risen from about 20s. per thousand to 50s. per thousand. The cost of labour and mortar to brickwork had also increased to a large extent. This enormous increase in the cost of both materials and labour was probably due in a great degree to the costly warfare in which England was then engaged, so that both skilled and unskilled labour would be scarce and materials dear.

The following analyses of the cost of brickwork as given by Mr. Skyring are interesting, for they show in detail how the brickwork prices were computed at that date:—

COST OF BRICKWORK WITH PLACE BRICKS LAID DRY, AS IN WELLS, &c. (1811).

	Per rod.
	£ s. d.
4,760 place bricks, at 42s. per M. -	10 0 0
Bricklayer and labourer, 3 $\frac{1}{2}$ days each laying ditto	1 15 0
	11 15 0
Add 15 per cent. profit -	1 15 0
Per rod	£13 10 0

COST OF BRICKWORK WITH PLACE BRICKS IN PARTY OR INTERNAL WALLS IN MORTAR (1811).

	Per rod.
	£ s. d.
4,500 place bricks, at 42s. per M. -	9 9 0
1 $\frac{1}{2}$ cwt. of lime, at prime cost -	1 2 6
1 double load of sand, at ditto -	0 12 0

COST OF BRICKWORK, &c.—*cont.*

	Per rod.	
	£	s. d.
Labour only, at prime cost -	2	5 0
Use of scaffolding -	0	3 0
	13	11 6
Add 15 per cent. profit -	2	0 6

Per rod - £15 12 0

	All materials.	Labour only.
	s. d.	s. d.

ARCHES.		
Rough camber or semi-arches, axed off the soffits and set in mortar for pointing - per ft. super.	0	8 0 3
Rubbed and gauged camber arches set in putty ditto	3	0 1 4

POINTING.		
Tuck and patt with a neat joint on new work, with the perpend regarded per ft. super.	0	7 0 3½

BRICKNOGGING.		
Stock bricks laid edgeways per yd. super.	3	0 0 8
Ditto ditto flat - ditto	3	9 0 11
N.B.—The quartering not to be deducted.		

BRICK PAVING.		
Common hard stock, flat, in sand - per yd. super.	3	0 0 5
Ditto, on edge - ditto	3	10 0 8
Ditto, flat, in mortar ditto	3	4 0 7
Ditto, on edge - ditto	4	3 0 9

PANTILING.		
Pantiling laid dry per square	35	0 4 6
Ditto pointed inside only ditto	7	6 4 6

PLAIN TILING.		
New plain tiling, on double fir laths - per square	63	9 7 9
Ditto with oak laths and 4d. nails - ditto	65	0 8 0

"EXPLAINED PRICE OF A SQUARE OF PLAIN TILING."

	£	s. d.
700 plain tiles, at 5s. 3d.	1	16 9
One bundle of laths -	0	5 0
500 of 4d. nails -	0	1 4
Tile pins -	0	1 0
2 hods of mortar -	0	1 4
Labour -	0	7 9
	2	13 2
20 per cent. profit -	0	10 7

Per square - £3 3 9

SLATER'S WORK.

	All materials.	Labour only.
	s. d.	s. d.
Welch Slates.		
Ladies - per square	48	0 9 0
Countesses - ditto	50	0 9 0
Dutchesses - ditto	54	0 8 0
Westmoreland - ditto	84	0 9 0

"N.B.—The above are Town prices, and if done in the country, an allowance must be made for cartage and extra expenses."

MASON'S WORK.

	s. d.
Stone.	
Cube Portland stone - per ft. super.	5 10
Ditto scantling size - ditto	6 2

Labours on stone.		
Plain work on Portland stone per ft. cube	1	3
Sunk ditto - ditto	1	7
Moulded ditto - ditto	1	10

Yorkshire stone paving.		
3in. York paving - per ft. super.	1	8
Ditto rubbed - ditto	2	2
3in. rubbed landing - ditto	3	0
Quarry-work sills, 8in. wide, and throated - per ft. run	2	0

CARPENTER'S WORK.

	All materials.	Labour only.
	s. d.	s. d.
Memel Fir.		
Without labour - per ft. cube	8	0
In bond and plates - ditto	8	6 0 6
In framed work - ditto	8	9 0 8
Wrought and framed - ditto	9	0 0 10
Wrought, framed, rebated and beaded - ditto	9	6 1 2

The author further gives a tabulated statement showing the value of fir scantlings per ft. cube for different prime-cost values of timber as purchased from the timber merchants after providing for carting, sawing, waste and builder's profit.

A TABLE showing the value of 1ft. cube of Fir scantling at any of the following prices at prime cost per Load, including carting, sawing, waste and profit.

Description.	Per load £9	Per load £11.	Per load £14.
	s. d.	s. d.	s. d.
Without labour -	5 4	6 5	8 0½
In bond and plates -	5 10	6 11	8 6½
Ditto framed -	6 2	7 3	8 10½
Wrought and ditto -	6 5	7 6	9 1½
Wrought, framed, rebated and beaded -	6 11	8 0	9 7½

The following detailed analysis accompanies the foregoing table in order to illustrate the method adopted in determining the cost of fir in scantling sizes at per ft. cube. In this example the prime-cost value of the timber is taken at £9 per load:—

50ft. cube fir at £9 per load	9	0 0
Carting ditto -	0	5 0
Sawing ditto -	0	10 0
7ft. waste -	1	7 3½
	11	2 3½

Add 20 per cent. profit - 2 4 5½

Per load - 13 6 9

Cost = 5s. 4d. per cube.

On referring to the rates quoted by Skyring for fir timber in scantlings it will be seen that they are based on a price of 8s. per ft. cube, or a prime-cost rate of about £14 per load. In 1776 rough fir fixed in wall plates, &c., was priced at 2s. per ft. cube, against 8s. 6d. per ft. cube in 1811. As already remarked, the astonishing increase in cost was no doubt due to a very large extent to the fact that this country had for many years previously been engaged in ruinous Continental warfare. As a result, commodities of every description were being taxed, and amongst other things a heavy duty was laid on imported timber.

With regard to the cost of deals and battens as used in joiners' work, &c., the author draws attention to the fact that "deals vary considerably in quality and price, but the prices here given are based upon a general assortment of deals as used in good work, at the prime cost of £60 per hundred for deals in the timber yard, and £40 per hundred for 12ft. 2½in. battens." Here again we have further evidence of the famine rates paid for timber; in fact, the cost of all descriptions of building materials at this period seems to have been extremely high, more especially when the monetary or exchange value of other commodities is also taken into consideration.

	All materials.	Labour only.
	s. d.	s. d.
BRACKETING.		
Bracketing, including plugging, to common cornices, of 1½in. deal per ft. super.	1	5 0 4½

CENTERING.		
Common centering to vaults - per square	38	0 8 6
Ditto to apertures per ft. run	0	8 0 1½

	All materials.	Labour only.
	s. d.	s. d.
ROUGH BOARDINGS, &c.		
1in. yellow deal rough boarding under slates per square	57	0 3 9
If edges shot add ditto	2	6 1 3
1in. sound boarding with double fillets - ditto	61	0 7 0
1in. furrings or battennings to walls - ditto	15	9 4 0
If to be sawn add ditto	—	0 8

Floors.		
1in. white deal, rough, edges shot - per square	58	0 4 6
1in. ditto wrought and laid folding - ditto	64	0 7 6
1in. yellow deal, rough and edges shot - ditto	60	0 4 6
1in. ditto, wrought, laid folding, straight joint ditto	74	0 10 6

1½in. ditto ditto with tongued headings ditto	115	0 13 6
If any of the aforesaid are plowed and tongued add ditto	9	0 3 6
1½in. yellow battens, straight joint, tongued headings, and edge nailed ditto	108	0 16 0
Extra for dowelling with oak dowels - ditto	6	0 2 3

INCH DEAL.		
Rough - per ft. super.	0	9 0 0½
Ditto edges shot - ditto	0	10 0 1½
Wrought one side - ditto	0	11 0 2½
Wrought two sides ditto	1	0 0 3½

SKIRTINGS, WITH BACKINGS COMPLETE.		
1in. torus skirting per ft. super.	1	2 0 4½
Narrow skirting grounds (per ft. run) -	0	3 0 1

SASH FRAMES.		
Deal cased frames, oak sunk sills, deal pulley pieces, for 1½in. sashes, prepared for double hanging, with iron sash pulleys - per ft. super.	1	1 0 4½
Ditto ditto for 2in. sashes	1	4 0 4½
Plain solid frames, oak sunk sills, weathered, throated, rebated and beaded for French casements - ditto	1	0 0 5

SASHES.		
1½in. deal ovolo sashes fixed - per ft. super.	0	9 0 4
Ditto prepared and fitted to hang or slide - ditto	0	9½ 0 4½
2in. ditto ditto - ditto	1	0 0 5

DOORS.		
1in. deal ledged wrought, ploughed and tongued per ft. super.	1	3 0 4½
1½in. four pannel bead butt and square - ditto	1	6 0 7
Ditto ditto moulded and square - ditto	1	6 0 7
2in. deal framed doors, 1½in. rails and braces, filled in with 1in. deal rebated and beaded boarding - ditto	1	10 0 8½

PLASTERER'S WORK.

Walls.		
Render one coat per yd. super.	0	6 0 3
Ditto and set ditto	0	10 0 4½
Ditto float and set ditto	1	2 0 6

Ceilings and partitions.		
Lath only per yd. super.	1	0 0 2
Lath and plaster one coat ditto	1	7 0 4½
Ditto and set in ceilings ditto	2	2 0 7
Lath, plaster, float and set in ceilings - ditto	2	10 0 10

PLASTERER'S WORK—cont.

	All materials, only.	Labour
	s. d.	s. d.
Cornices.		
Plain plaster cornices		
per ft. super.	1 4	—
Limewhiting.		
Limewhite once		
per yd. super.	0 1½	0 3¼
Ditto twice - ditto	0 2½	0 1½
Wash, stop and whiten in distemper in new work		
ditto	0 4	0 2
Ditto to old work	0 6	0 3
Wash, stop and common colour	0 5	0 2½
Parker's Roman Cement.		
Render, float and set on bricks	4 9	1 0
Ditto on lath - ditto	5 9	1 3

PAINTER'S WORK.

Plain Painting.

Common colours once in oil	per yd. super.	0 4
Ditto twice - - - ditto	- - - ditto	0 7
Ditto four times - - - ditto	- - - ditto	1 1
Ditto finished French grey or other colours nearly of the same value, add - - - ditto	- - - ditto	0 4
Patent green or other superior colours add - - - ditto	- - - ditto	0 8
Skirtings, &c.		d.
Skirtings once in oil - per ft. run	1½	
Ditto twice - - - ditto	2½	
Water trunks and gutters once in oil	ditto	2
Ditto twice - - - ditto	ditto	3

"N.B.—It is customary to take the labour at one-third."

PAINTER'S WORK—cont.

Sash Frames.	s. d.
Once in oil - - - each	1 0
Ditto twice - - - ditto	1 6
Sash Squares.	s. d.
Once in oil - - - per dozen	1 0
Ditto twice - - - ditto	1 6

GLAZIER'S WORK.

Best Newcastle crown in squares of 3ft. to 3ft. 6in. - per ft. super	3 0
Ditto 2ft. 6in. and under 3ft. ditto	2 6
Ditto under 2ft. - - - ditto	2 1
Third Newcastle crown in squares of 2ft. and upwards - - - ditto	1 9
Ditto under 2ft. - - - ditto	1 6
Crown glass ground, in squares of 2ft. and upwards - - - ditto	4 0
Ditto under 2ft. - - - ditto	3 6

It will be observed that glass was very expensive in the early part of last century, and probably this fact accounts to some extent for the small windows which were then generally constructed in ordinary houses.

DAYWORK PRICES (1811).

LABOUR.

Bricklayer (from Lady day to Lord Mayor's day) - - - per day	6 0
Ditto (from Lord Mayor's day to Lady day) - - - ditto	5 6
Labourer (from Lady day to Lord Mayor's day) - - - ditto	4 0
Ditto (from Lord Mayor's day to Lady day) - - - ditto	3 6
Mason - - - ditto	6 6
Carpenter or joiner - - - ditto	6 0
Plasterer - - - ditto	6 0
Plasterer's labourer - - - ditto	4 3
Plasterer's hawk boy - - - ditto	2 4
Plumber - - - ditto	6 6

Comparing these rates with the daywork prices of 1776 we find that the workmen's wages have increased from 75 to 100 per cent. since that date.

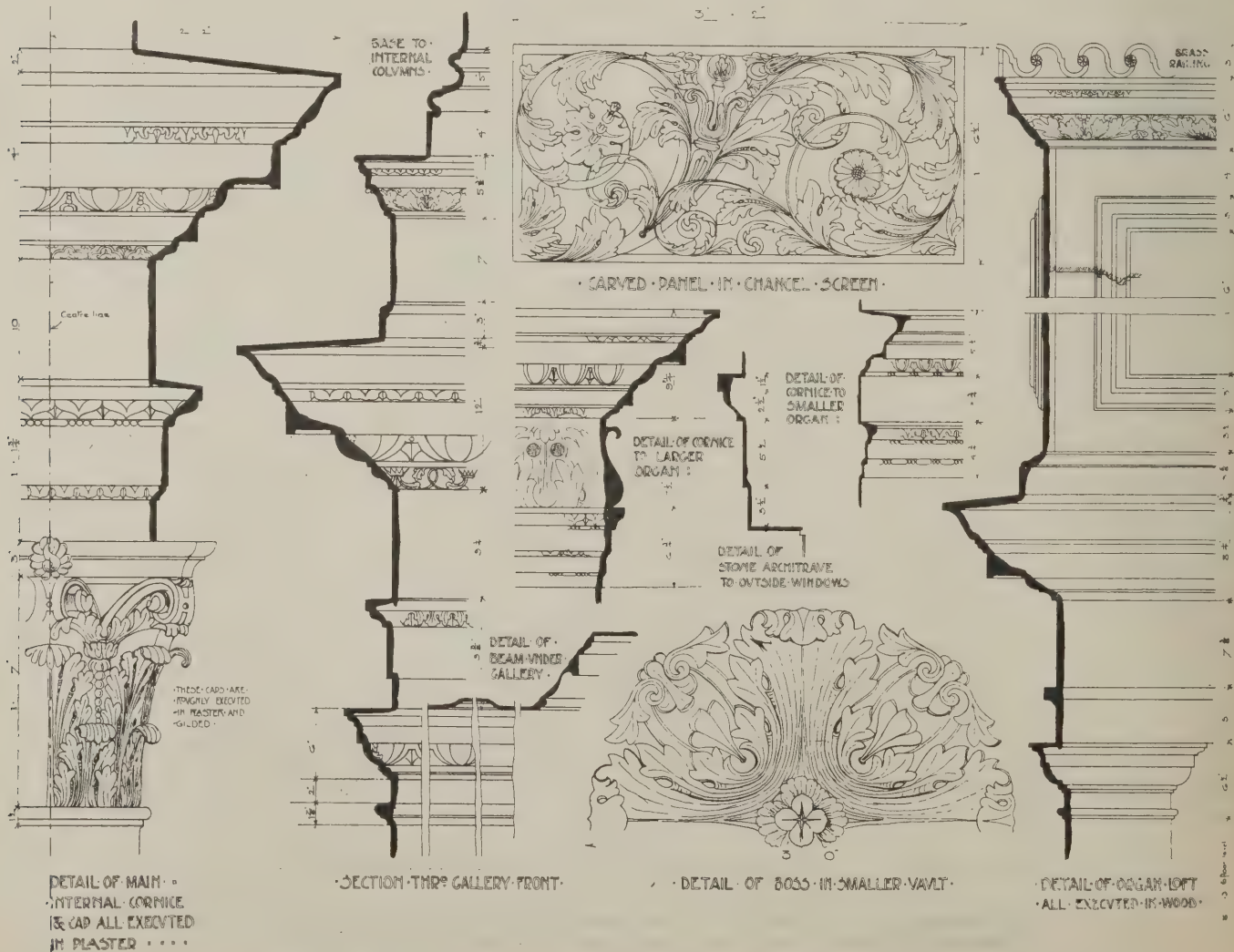
(To be continued.)

Bricks and Mortar.

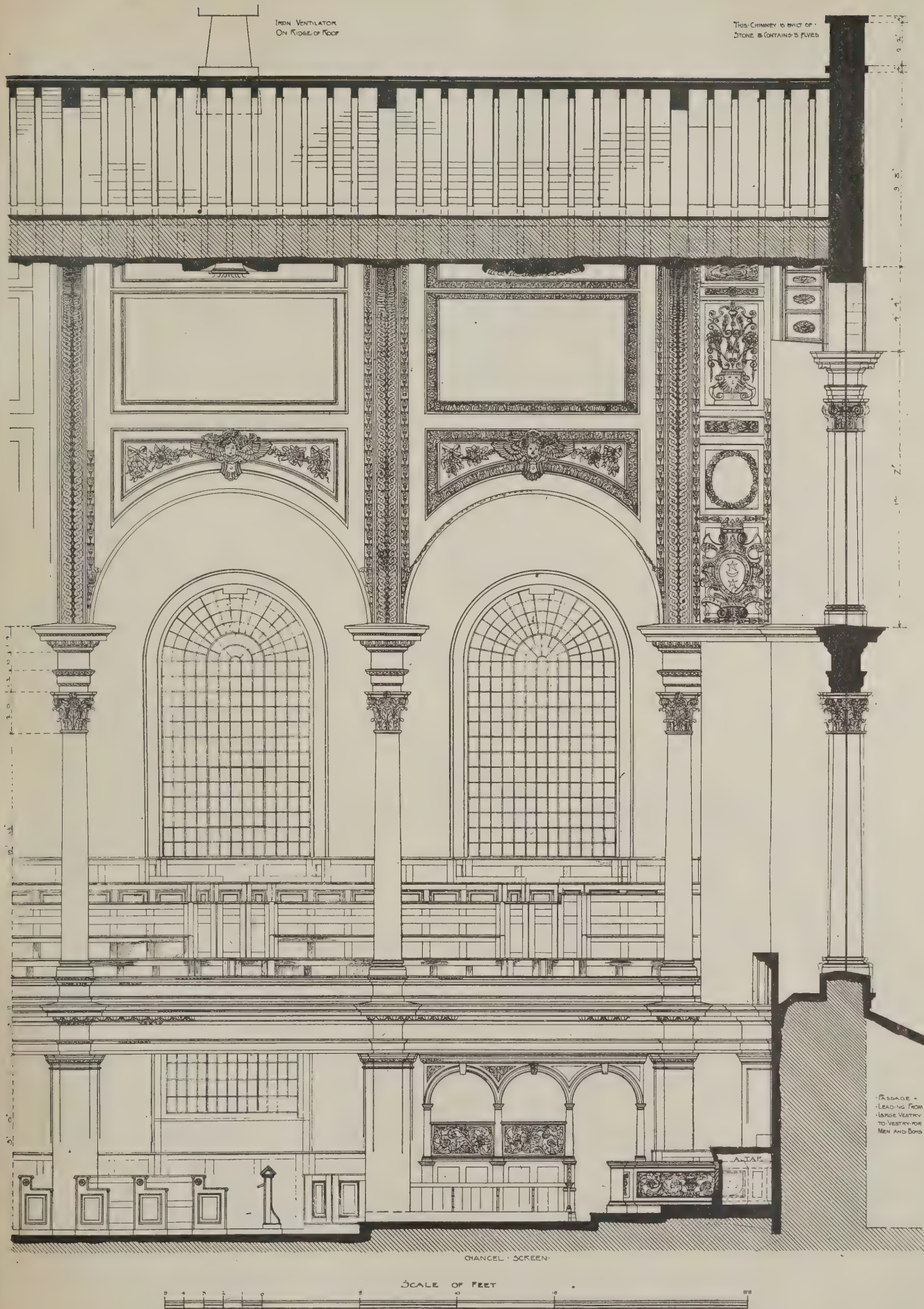
Aphorism for the Week.

The study of the Gothic construction is useful because it does not adopt those absolute formulas which are always neglected in execution by the practitioner.—VIOLETT-LE-DUC.

Our Plates. A NOTE about Mr. McGibbon's drawing is given on p. 165 of this issue.—The drawings of St. James's Church, Piccadilly, London, by Mr. C. Lovett Gill, were awarded a certificate of hon. mention in this year's R.I.B.A. competition for measured drawings. St James's Church is an instance of Wren's adoption of Gothic design, the vaulting of the aisles being transverse, like the side-chapels, between buttresses which stiffen the main construction. The vault here is not stone but lath-and-plaster. The wall behind the communion table is richly decorated in Gibbons' characteristic manner. The interior is 86ft. long and 67ft. wide. Fergusson says: "Its greatest merit is the mode in which the roof is constructed; first as a piece of carpentry, but more as an appropriate mode of getting height and light with a pleasing variety of form. After St. Stephen's, Walbrook, it is Wren's most successful interior, and though the church is disfigured by a hideous east window and an objectionable reredos, and many of its minor details are unpleasing, it is one of the very best interiors of its class we possess."

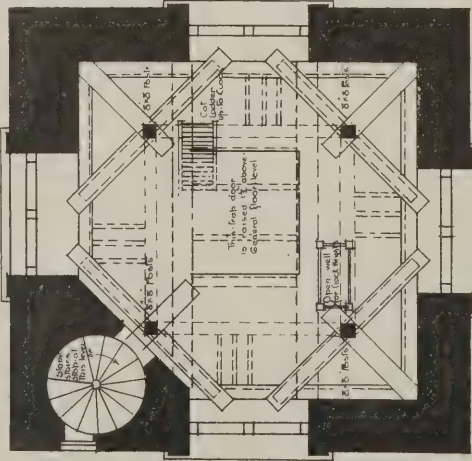


ST. JAMES'S CHURCH, PICCADILLY, LONDON: DETAILS. MEASURED AND DRAWN BY C. LOVETT GILL.

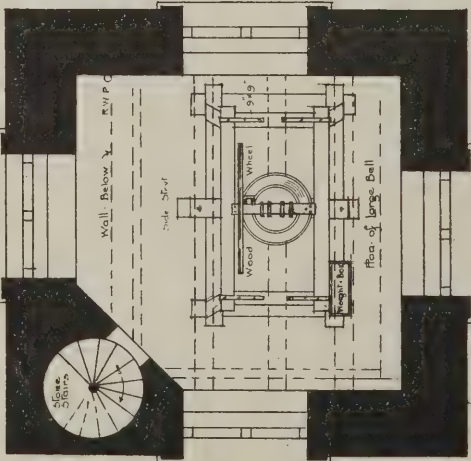


ST. JAMES'S CHURCH, PICCADILLY, LONDON (BUILT 1683; SIR CHRISTOPHER WREN, ARCHITECT): LONGITUDINAL SECTION
SHOWING TWO NORTH-EAST BAYS. MEASURED AND DRAWN BY C. LOVETT GILL.

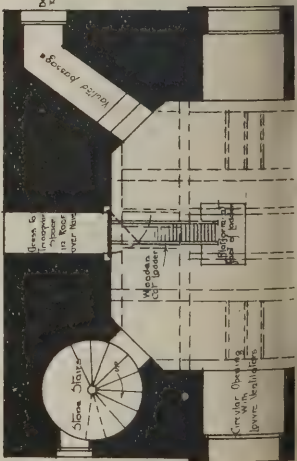
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PLAN AT LEVEL C



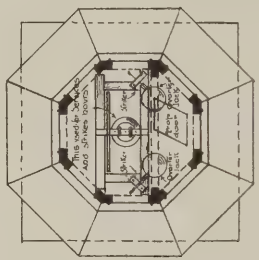
PLAN AT LEVEL B



ST JAMES CHURCH PICCADILLY LONDON BUILT 1683

SIR CHRISTOPHER
WREN ARCHT

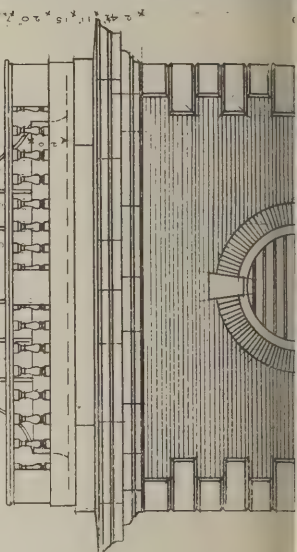
Scale of feet



PLAN AT LEVEL D



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DRAWINGS OF ARCHITECTURE.

EVERY architect is familiar with the charming perspectives of Mr. Alexander McGibbon, of which we have illustrated quite a number in our pages. We now give two of his pencil sketches (neither published before)—one of Durham Cathedral, as a lithograph plate, and the other on this page. They are both impressionistic, but the latter more especially so, a particularly clever drawing which suggests a great deal with a few lines. As Ruskin pointed out long ago, an architectural draughtsman has a tendency to draw more than he sees; on the other hand, the non-architectural delineator of buildings usually draws less than he should see. Perhaps the golden mean is the more correct, but an architect's drawings of architecture must always in a sense be personal notes into which he contrives to put as much useful information as possible; he does not care, for example, whether he obtains the tone value of a certain shadow or not, provided he gets the detail, and if he be a skilful draughtsman he can do that without the cast-iron look which most architectural perspectives had twenty years ago.

Mr. McGibbon's drawings are particularly free in their treatment, and not the least in-

teresting parts of them are the figures and the trees—such sad affairs in the majority of architects' perspectives.

Obituary.

Mr. John Pethick, who was until recently head of Messrs. Pethick Brothers, the well-known firm of contractors, which has just completed the widening of London Bridge, died on Tuesday last week from injuries sustained in a carriage accident. Mr. Pethick was seventy-six years of age. He was born near Plymouth and early in life became a member of a building firm which erected a large number of houses and other buildings in Plymouth. In 1871 he assumed control of the business, assisted by several of his sons, and developed it considerably. He built the Guildhall and municipal buildings at Plymouth, and carried out several important contracts for the Government at Devonport, including the erection of the Royal Engineering College at Keyham. He was also one of the contractors for the completion of the London and South-Western Railway to Plymouth, and was engaged on other important works in different parts of the country. Mr. Pethick had been for many years a member of the Plymouth Town Council and Board of Guardians, and was mayor from 1898 to 1900.

Keystones.

The new Church of the Birmingham Oratory has been designed by Mr. E. Doran Webb.

The Horbury Free Library Competition has been won by Mr. Benj. Watson, architect, of Batley. Fifteen designs were sent in.

The Reconstructed Lyceum Theatre—in future to be a music-hall—will seat 2,800 persons. The plans have been approved by the London County Council.

In Hoarwithy Church five stained-glass windows have been placed. They were executed by Mr. H. G. Murray, of Caroline Street, Eaton Square, W., from the design of Mr. J. P. Seddon, the architect of the church.

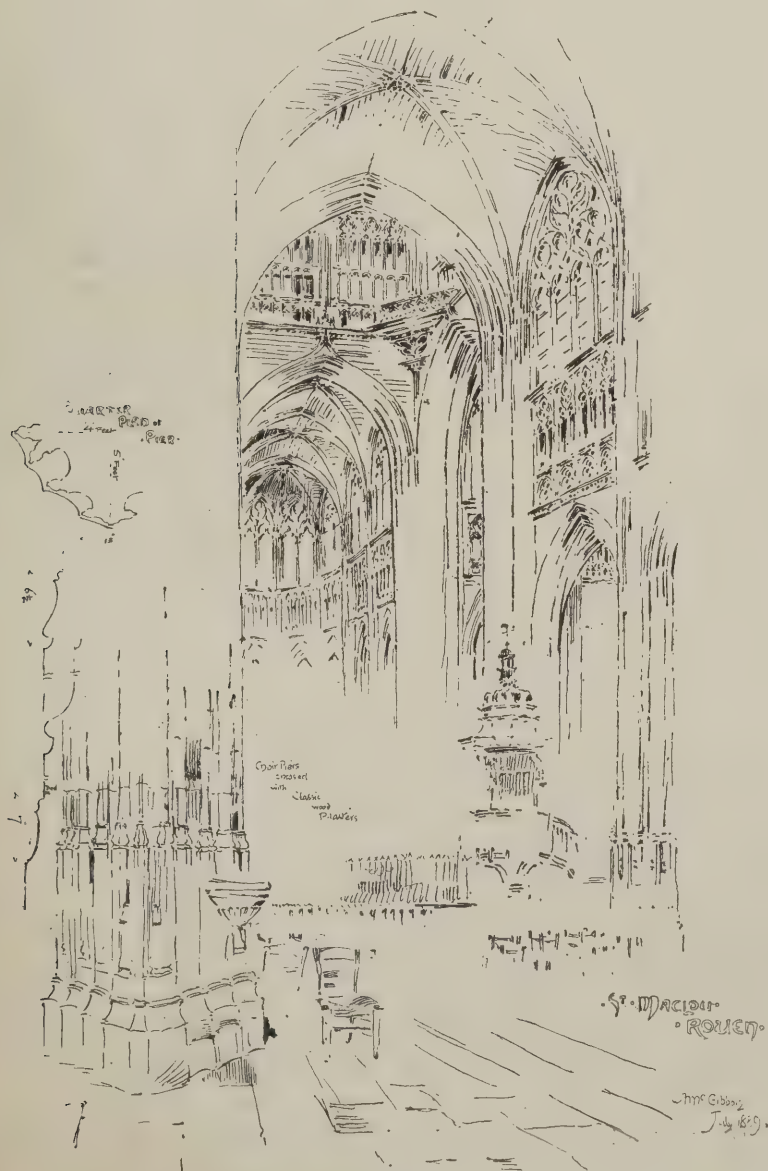
British School at Athens.—On March 16th the first sod was turned of the new library which is to be added to the Students' Hostel of the British School at Athens, as a memorial to the late Mr. F. C. Penrose, the first director of the school. Mr. Heaton Comyn, A.R.I.B.A., is the architect. It is estimated that the library, which is to serve also as a hall for open meetings of the school, will cost, with its fittings, about £1,200.

The Restoration of Waltham Abbey Church Tower.—It was originally proposed to erect a battlemented parapet, with pinnacles, but objection was raised on the grounds that no alteration should be made in the shape of the fabric. Amended plans have now been adopted which are regarded as a compromise, showing the tower battlemented, with turrets corresponding to the existing buttresses. They were submitted to the approval of the subscribers, nearly all of whom expressed their agreement with them.

Ellesmere Parish Church Tower is to be restored. The portion proposed to be repaired was built some time in the thirteenth century. It is composed chiefly of red and yellow sandstone. The windows in the belfry will practically be rebuilt; it is proposed to use Grinshill stone for this. A great deal of the belfry tower is built of red sandstone, and it is hoped to use another red sandstone, so as not to take away the well-known character of the tower. The bells cannot be hung at present on account of the unsafe state of the stones.

Bradford Town Hall is proposed to be extended from designs by Mr. F. E. P. Edwards, A.R.I.B.A., the city architect, at a cost of £70,000. A new building is to be erected where the Conditioning House formerly stood, and structural alterations made to the present hall. The old and new buildings are to be connected by a spacious corridor, which will be a continuation of the existing main entrance. The new council chamber will be in the centre of the extension, and will accommodate 100 members. The new frontages have been designed in the Gothic style, to harmonize with the present town hall, but are not so elaborate. The new buildings will be six storeys high.

The Parish Church of St. Thomas à Becket, Old Portsmouth, is being restored under the direction of Mr. T. G. Jackson, R.A. It was built at the end of the twelfth century, and the chancel of the original church, which is still standing, contains some features almost unique in the architecture of English parish churches. In 1683 the Early English nave and central tower were pulled down and replaced by a classical nave with western tower. While removing a number of bodies from under the floor the foundations were surveyed, and it was discovered that those of the walls and columns had not been laid on the hard bed of gravel which the original builders would have found had they dug a few feet deeper. The result is that the church has become structurally insecure.



DRAWINGS OF ARCHITECTURE: ALEXANDER MCGIBBON.

BRITISH TIMBER.*

By H. J. ELWES, F.R.S.

THE subject of British timber is one which in the future is likely to acquire a much greater degree of importance than it has at present; because though large supplies of foreign timber grown on virgin soil in the forests of America, Europe, India and Australia are brought by railways and steamers to our ports at a cost which represents in most cases little—and in some nothing—more than the cost of felling and transport, we have abundant evidence that these supplies are diminishing very rapidly and cannot long continue to arrive at anything like the present prices.

My own qualifications to speak on the subject are that I have during thirty-five years of travel seen in their native forests a great number of the trees on which we now depend most largely, and have had considerable experience in growing some which I believe are likely to produce valuable timber in Great Britain. I have also visited the best-managed forests of France, Germany, Norway and Austria, and have read works on scientific forestry and consulted their authors.

Railway Charges; Rates and Taxes.

A very serious drawback to the use of English timber is caused by the rates charged by railway companies for carriage, which in many cases are much higher than those charged on foreign timber, especially pit-wood and deals; but as the railway companies are in many cases the best customers of the timber merchants the latter are often unwilling to fight them on the question of rates. Another point is that connected with taxes. The rating of woodland for local expenditure is most unfair in the case of new plantations, and must tend to check the extension of our woodlands if not redressed. I have just planted over 100 acres at a cost of £6 10s. an acre, plus the cost of fencing, and as, in order to keep out rabbits from adjoining land, I have had to wire it all round, I put the total cost at not less than £7 10s. an acre. For twenty years certainly, and probably for thirty years, the land will produce no income whatever, and yet I shall have to pay rates and income tax on an estimated value of about 5s. per acre during the whole of that time, whilst my son will have to pay a death duty on a valuation of which he will not live to realize more than a very small part, if any. I am not at all sure that the money I have invested in planting land which no longer pays to plough would not have been better invested in Consols at present prices.

I will now make some remarks on the various species of timber of most importance.

Oak.

Of oak I need say little, because you all know that it is one of the most valuable trees we have, though it is the longest in coming to maturity. Its value has fallen owing to the large importations from Austria that have superseded the so-called Riga oak, which in its turn took the place of English oak in the last century for high-class flooring, wainscoting and panelling, and of which the accessible supplies appear to be nearly exhausted.

American oak is also now being used to a great extent on account of its lower price, though believed by those who have most experience to be inferior in strength and durability for railway wagon building.

But we have in some parts of England a form of oak, known in the trade as brown oak, whose value for internal house decoration has recently led to a great increase in its price, principally caused by a demand

from North America, to which country most of the best of it goes at very high prices. When the tree is felled before the timber has become rotten at heart it can be used with beautiful effect, being much superior in colour to that of the foreign wood for panelling or cabinet-making; the latter is often made darker by fuming or staining, but does not have the rich colour of good brown oak.

The Turkey oak is a species usually considered of little or no value because its timber will not stand exposure to the weather, and is more liable to be worm-eaten than common oak when used indoors, but the figure of the wood when properly cut gives it a value for internal work far beyond its current price.

Elm, Ash and Beech.

Elm is another timber of which you know the value and uses as well as I do. It is one of the fastest, if not the fastest, growing hardwood we have. It has however a tendency to form large branches, which if not pruned when young often split the trunk before maturity; so that the tree should not be planted alone but drawn up amongst other timber in order to prevent this great fault.

Ash is the tree which in the opinion of most timber merchants is the most profitable hardwood to plant wherever the soil suits it. The timber is now, when of good quality, worth more than oak. It grows nearly twice as fast. It is less exposed to foreign competition than any timber we have. It seeds itself more readily than any other English hardwood except sycamore, and is worth money at a smaller and younger stage than any other hardwood except chestnut.

Beech is another timber tree so well known that I need hardly mention it, except as regards the fact—long ago recognized by German and French foresters, but as yet not generally understood in England—that it is the most valuable fertilizer of poor soils on the chalk and limestone that we possess. Whenever larch are subject to diseases, beech should be planted with them in the proportion of at least one beech to two larch.

Of our many other hardwoods the most important are:—

Sycamore, which when of large size is now more sought after and is more valuable than almost any other timber, though it seems rather doubtful whether the demand is sufficiently assured in the future to justify its being largely planted.

Walnut, though its timber is not here often equal in beauty to that grown in the hotter and drier climates of which it is a native, is worth a great deal more than it usually realizes when sold standing. In the warmer and drier parts of England I should not hesitate to plant it for timber, and in Norfolk I have even seen it self-seeded in Lord Leicester's woods. It is a tree which requires time (at least 100 to 150 years) to produce timber of the best quality, as the sapwood is thick and comparatively useless and is somewhat liable to become wormeaten.

Hornbeam is a tree which rarely grows to perfection in England, and which, if wanted for special purposes for which a very hard wood is required, can probably be imported more cheaply from France than it can be grown here.

Cherry is a tree whose value as timber is not recognized in the trade, though formerly much more used for furniture and cabinet-making.

Willow, birch and alder are all trees of secondary value, to be grown for timber only in districts where a market is assured, but for ornament almost everywhere in such situations as are suitable to them.

I may say, however, of birch that when the time comes—and it is not so far distant as many people assume—that coal becomes too scarce and dear to be wasted as we now waste it in open fireplaces, and when, to heat our houses, we have to adopt close brick

stoves such as are used in Northern and Central Europe such timber as birch and beech must have a value as firewood which they do not now possess. These stoves I have proved in my own house to be the most economical and comfortable form in existence for burning wood which is not good enough to burn on an open hearth.

The *Lime* is a tree which at one time was much more valued both for timber and ornament than at present. I cannot exactly make out why its wood has fallen so much in price, for though American lime wood (known as basswood) is to some extent competing with it, yet it has valuable qualities which no other possesses to the same degree, and it will grow to a good size even on poor soil.

Conifers.

We will now turn to the conifers, of which I may say briefly that larch is worth all the rest put together.

It is always saleable, and the only foreign supplies likely to compete with our own are the larch forests of the White Sea and Petchora districts in North Russia. At present, as I am told, the price realized in England does not allow a large importation of this larch timber, for though its durability and strength should make it far more valuable than that of Scots pine and spruce, its hardness causes the ordinary builder to prefer the latter.

Scots Pine is a tree most suitable for sandy soils in the south of England, and for peaty soils in the north. Where it can be grown to a large size, and close enough to keep it clean and straight, it is a valuable tree, but its strength depends on the amount of red heart-wood, which time alone will produce.

Spruce is the worst of all our common conifers from a timber point of view and notwithstanding what writers tell us, can very seldom be grown thick enough to keep it free from the branches which make English-grown spruce usually so knotty and weak.

Douglas fir is the fastest-growing conifer we have, and on deep sandy soil, where not exposed to wind, attains a marvellous size in a very short time. The value of its timber is well known when imported, but it must be remembered that this comes from trees of great size and age, and I doubt whether it would pay as a crop to fell at less than 100 to 150 years old, which is too long for most people to contemplate. I should also most strongly warn intending planters of Douglas fir to be quite sure that they get the variety which grows on the Pacific Coast and not the one from the Rocky Mountains of Colorado, because, however ornamental and hardy the latter may be, its growth is not—as has been proved on Dr. Watney's estate in Berkshire—more than half as fast as that of the so-called Oregon variety.

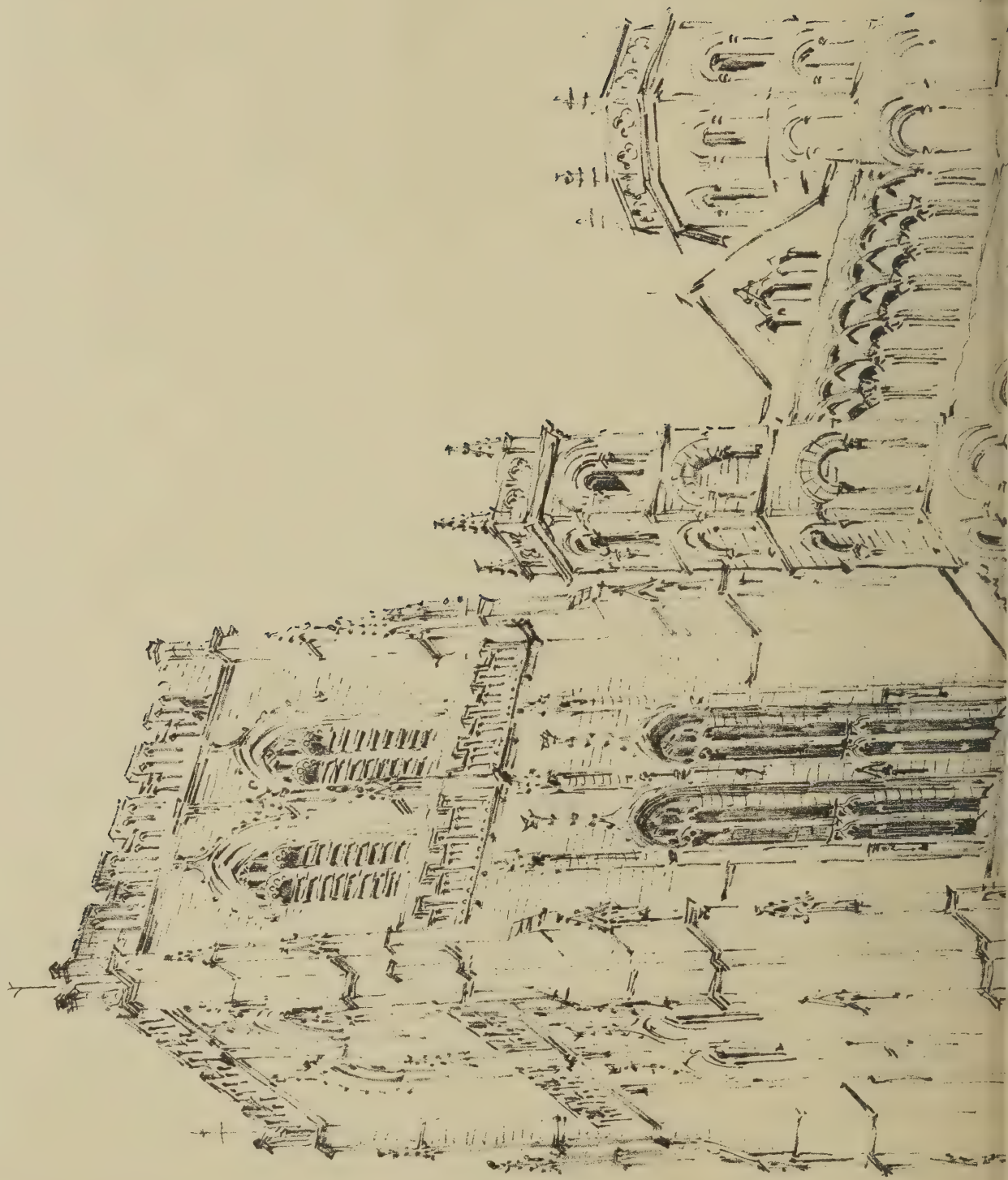
The only other exotic conifer which has been much planted as a timber tree in England until recently is the *White Pine* of the Northern States and Canada, *Pinus strobus*, usually known in Europe as *Weymouth Pine*.

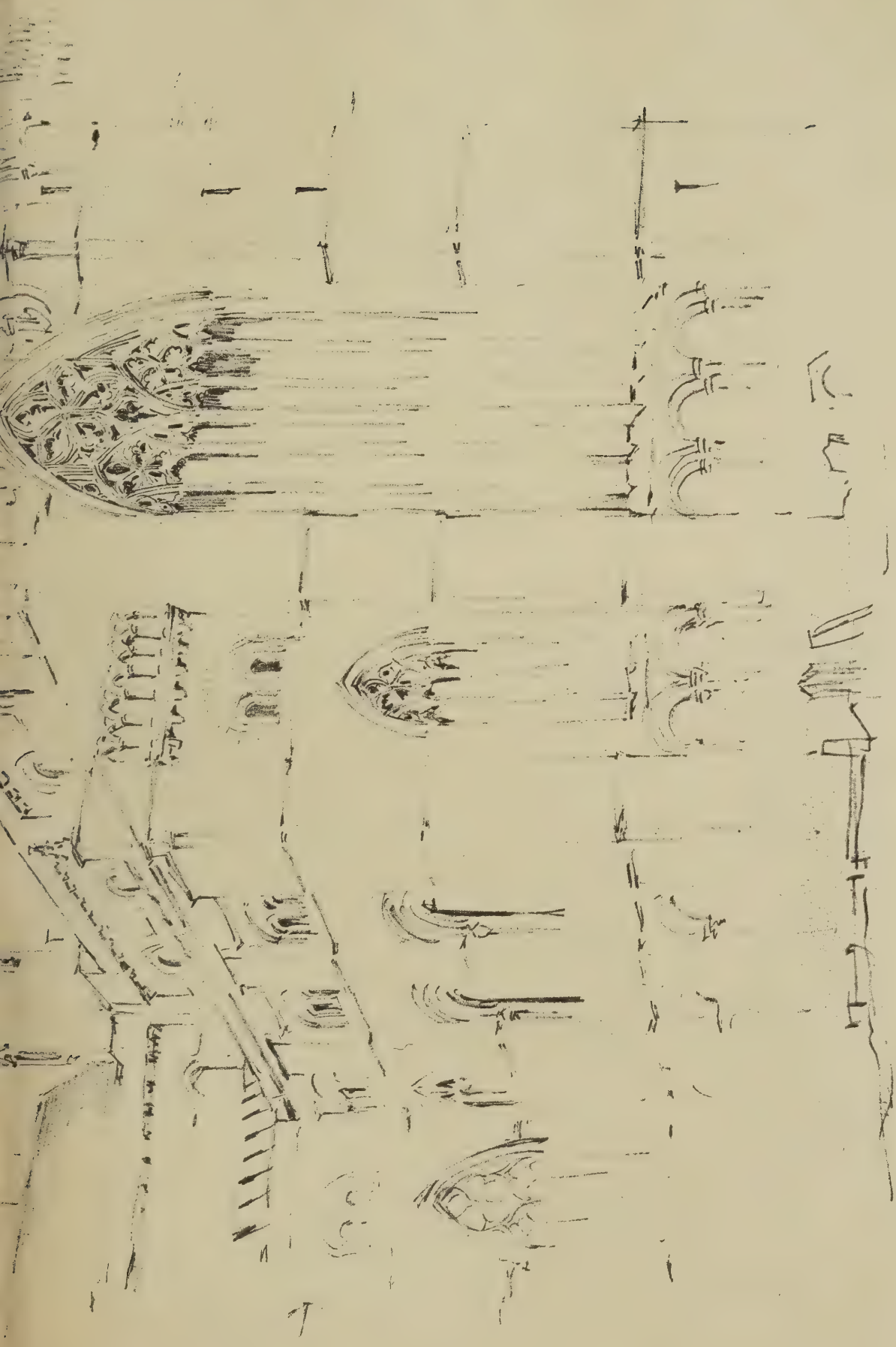
The *Cedar of Lebanon* is too well known to mention except in connection with its timber, which is very ornamental, though too soft for most purposes. I have seen a drawing-room in London which is entirely floored and panelled with the wood of one tree blown down on the owner's lawn, and the delicate pink colour, combined with the sweet smell, made it a most successful experiment. What is called Cedar in the trade is either the West Indian *Cedrela odorata*, or the so-called pencil cedar, *Juniperus virginiana*, of which the latter, though it is quite hardy in England, grows too slowly and does not become large enough to give it any commercial value.

* Abstracts from a paper read before the Surveyors' Institution on February 22nd, 1904.

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*Supplement to
THE BUILDERS' JOURNAL AND ARCHITECTURAL RECORD,
Wednesday, April 6th, 1904.*





30/3 April 1880

DRAWINGS OF ARCHITECTURE: DURHAM CATHEDRAL FROM THE NORTHEAST, BY ALEXANDER MCGIBBON.

SPOTTISWOODE & CO LTD LITH LONDON.

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Other Trees.

I now come to some trees which, though not generally looked upon as forest trees, and as yet seldom planted except for ornament, will, I believe, if tried with a due knowledge of their peculiarities and requirements, be as valuable, if not more so, than some of those of which I have already spoken.

The first and the most valuable from a timber point of view is *Juglans nigra*, the *Black Walnut* of the Eastern United States of Canada.

Another is the American ash, of which there are several species.

The *Tulip tree* (*Liriodendron Tulipifera*) is one of the most beautiful flowering trees we have, and comes to a great size on deep, moist, heavy soil. Its timber is now very largely used for furniture and cabinet-making under the name of "white wood" or "canary wood," and is known as yellow poplar in the United States.

The *Plane tree* also produces excellent timber which is very ornamental when taken from trees of some size and age. I cannot say that as yet it has much commercial value in England, because there is no supply, but in France and America it is largely used for inside work, and the better parts are cut into veneer for decorative purposes.

Ailanthus glandulosa. A Chinese species, known as the "tree of heaven," is another which grows to a large size, ripens seed in England, and produces excellent timber; it is little known at present, but an American friend assures me that it makes excellent furniture.

Sorbus domestica. A tree quite unknown to English timber merchants, but highly valued in France, where it is known as "Cromier."

I may add that as I am now engaged upon a work on the trees which attain timber size in Great Britain and Ireland, in which I have the assistance of Dr. Henry, of Kew, I shall be glad to receive and name any specimens of wood or trees which in the course of your business and pleasure you may meet with and think worthy of notice.

Enquiries Answered.

The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

City and Guilds Examinations.

BOLTON.—QUANTITIES writes: "Can the questions for the City and Guilds quantities examinations be had for past years?"

The past examination questions in the various subjects, including that of "Quantities," are published in the annual report of the work of the Department of Technology of the City and Guilds of London Institute by John Murray, Albemarle Street, London, W., price 9d. nett, or post free 1s.

HENRY ADAMS.

Right of Light.

ARNOLD.—J. R. S. writes: "The accompanying sketch (not reproduced) shows the relation of a proposed new building to existing cottages. Will the two adjoining owners, A and B, have any legal right to object on the ground of interference with their right of light? Both blocks of cottages have existed for more than twenty years."

There is not the slightest fear that either A or B will have legal cause of complaint on account of interference with their ancient lights. The damage done is in neither case substantial enough to warrant action-at-law on their part.

F. S. I.

Levelling.

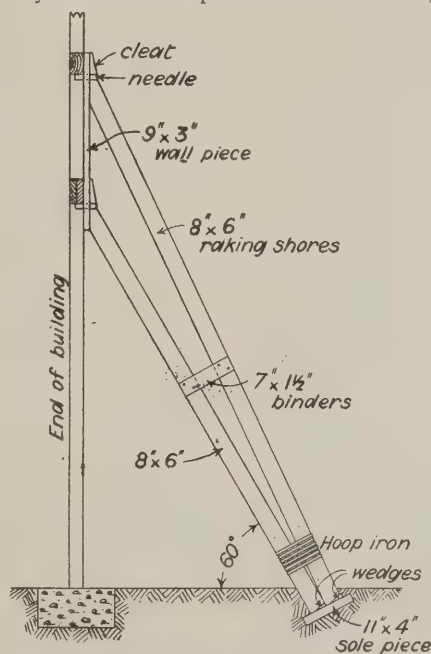
WELLING.—ASSISTANT writes: "I find when levelling on a bright sunny day or when there is a cold frosty wind it is almost impossible to keep the level in proper adjustment. Is this usual, and can it be prevented?"

Though my own level is extremely light, I have never experienced this, nor have I heard of it before. I would suggest that the attachment of the metal head to the tripod legs be carefully examined. It is more likely that some screws are loose than that the sun has anything to do with the matter. Other possibilities are that the levelling screws are not properly tightened up, one or more being left "free" accidentally, or that the instrument has received a blow which has bent the cone.

M.

Temporary End to Large Workshop.

GLASGOW.—F. A. M. writes: "The accompanying drawing (not reproduced) shows the timber end of an engineering workshop. What is your opinion as to its stability and power to resist wind-pressure, which is the only force to bear upon it. The side wings



have the ends of the joists of the mid-floor to stiffen the uprights, but the centre span has nothing to stay the timber from, from stanchion to stanchion and the entire height. The base for the timber end is an old concrete one, formerly a wall."

The simplest method would appear to be to shore up the horizontal timbers from the inside on each side of doorway in central bay, as in the above sketch. The side bays would probably be stiff enough with the floor behind, but the work is all rather light.

HENRY ADAMS.

Lectures on Botany and Forestry.

LONDON.—W. G. G. writes: "Are there any classes or lectures in London on botany and forestry?"

Through the courtesy of the Board of Agriculture and Fisheries we are able to state that lectures on botany are given at various centres in London, such as University College, Gresham College, the Royal College of Science, King's College, &c. We understand there is a lecturer in forestry at the City of London College. A list of evening classes in botany (and other subjects) has been published in the London Technical Education Gazette for September—October, 1903 (King & Son, price 2d., or by post 3½d.). For further particulars you should communicate with the Technical Education Board of the London County Council.

Building for Smoking Bacon.

NORTHAMPTON.—F. H. H. writes: "Kindly give me some information about a small building for smoking bacon—size of fire, &c."

The size of fire and amount of fuel consumed will vary according to the quantity of bacon in the hanging house and the extent to which it is desired to smoke it. The proportions of the house depend upon the site and the number of sides of bacon to be smoked. It is not generally advisable to place more than one row of sides above those hung from the ground level. They are best hung on iron bars with wheel gearing similar to that used in most public abattoirs and meat markets.

Stone Church and the Temple Church.

SETTLE.—CONSTANT READER writes: "Have any descriptions of Stone Church, Kent, and the Temple Church, London, ever appeared in your Journal?"

An illustrated description of Stone Church, Kent, appeared in our issue for October 4th, 1899, and a description of the Temple Church, London, in that for April 24th, 1901.

Buildings to Measure near Williton.

WILLITON.—STUDENT writes: "Please mention some buildings of note in this district suitable to measure for the R.I.B.A. examinations. In which church is there a famous painting (I believe it is on the Bridgwater Road)?"

Somersetshire abounds in fine churches, particularly remarkable for their rood-screens and towers; but surely it would be possible to obtain fuller information about them locally than through the columns of a London paper.

M.

Portfolio; Liverpool Cathedral.

NEWCASTLE-ON-TYNE.—HARDUP writes: "(1) Kindly suggest a method of making a portfolio for drawings. (2) Do you supply portfolios for your plates? (3) Has an exterior perspective been published of the accepted design for Liverpool Cathedral?"

(1) The cheapest way will be to get some stout cardboard, cut it to the size you want, glue a hinge of linen to form the back, and put tapes through the other sides to tie in the usual way. (2) No. Make a portfolio as suggested. (3) The only one we know of is in the illustrated pamphlet about the cathedral which was issued a short time ago by the Cathedral Committee, Church House, Liverpool, price 3d.

An Easter Tour in Gloucestershire.

DUBLIN.—H. G. L. writes: "I have planned a two or three weeks' cycling and sketching tour in Gloucestershire, starting from Bristol and going north as far as Tewkesbury, Pershore and Broadway, and then returning south through the centre or eastern side of the county. Can you give any hints as to places to visit along these lines of route, or in other counties close to the border?"

Probably the best work would be seen by crossing the Severn (by rail through the tunnel, or over the ferry at Portskewett), and taking Chepstow Castle first, then Raglan, and then Tintern Abbey, so getting to the beautiful Wye Valley, which can be followed up to Ross and Hereford. Turning eastward, Malvern (for the Abbey Church) might be taken on the way to Pershore and Tewkesbury, and the return made *via* Stroud, Tetbury, Malmesbury, to Bradford-on-Avon (for the Saxon church of St. Lawrence) and Bath (Abbey and Roman Baths).

M.

Setting Firebrick Work.

MANCHESTER.—A. C. writes: "What advantage is to be gained by using fireclay-cement for setting firebrick work in boiler flues, economizer chambers, &c.? Is it false economy to use ordinary mill mortar, and why?"

Firebrick is only used where it is subjected to great heat, and ordinary mortar in

such a situation would crumble and fall out with consequent disintegration of the brick-work. Fireclay-mortar is the only possible one to use unless the fireclay bricks are built into position raw and burnt by peating the interior so as to form practically a solid lump of fire-resisting material.

St. Alphege, Greenwich.

LONDON, S.E.—H. N. S. writes: "Can you tell me of any book containing a drawing to scale of the pulpit in the church of St. Alphege at Greenwich, or any drawing by itself in the form of a plate?"

No. If it is wanted, the only thing to do is to measure for yourself. M.

A Patent Glazing Bar.

BIRMINGHAM.—OAK writes: "I have an idea for the improvement of roof-glazing, but before proceeding with it I want to know whether the parts marked on the accompanying tracings (not reproduced) are patented, and to what extent, as I notice that in several kinds of glazing the different parts are very similar. Would there be any infringement if I were to use a combination of several parts, but modifying the pattern somewhat?"

In order to give a direct answer to your question we should have to spend a very considerable time in making a search through the abridgments at the Patent Office. This, of course, we cannot undertake, and we must ask you to either make the search yourself (copies of the abridgments will be found in the Birmingham chief library) or instruct a patent agent to do so. Hundreds—most probably thousands—of patents have been taken out in connection with roof-glazing, and you might very easily come into collision with some trade firm if you were to exploit your own device and it happened to be an infringement of theirs. The best advice we can give you, if you are intent on the idea (though, personally, we should be as chary of glazing bars as of sash-fasteners) is to wait till the beginning of next year, when the

section of the new Patent Act that deals with preliminary search by the officials at Southampton Buildings will come into force. By paying an extra fee of £1 you will then be able to have a thorough search made by them, and they will state on your specification whether your idea has been anticipated.

Books on Renaissance Architecture.

HALIFAX.—UNCERTAIN writes: "Kindly name a book on the outlines of Renaissance history in Europe suitable to study for the R.I.B.A. intermediate examination."

"Gothic and Renaissance Architecture," by the late Prof. T. Roger Smith and Sir Edward J. Poynter (5s.), and Banister Fletcher's "History" (21s.). These can be obtained from our offices post free for the prices named.

Architects under Government.

LIVERPOOL.—CIVILIAN writes: "(1) What salary are the assistant architects at the Office of Works paid, and by how much does it increase yearly? (2) Has the architect to the Government of India any staff, and could an architect's assistant obtain a position there? (3) Are there any other Government or municipal offices abroad where architects or surveyors are employed?"

(1) Temporary assistants in the Office of Works are paid and treated just like assistants in architects' offices, and the appointments are obtained in the same way, by personal application. Permanent appointments are made from time to time by competitive examination amongst candidates who are nominated almost exclusively from the temporary staff, with a salary which commences at £150 a year, rising by £10 annually to £300, with prospect of promotion to a higher class in which the salary rises to £400, and with possible further promotion, and a pension on retirement at sixty-five years of age of as many sixtieths of the salary then being earned as the assistant has been years on the permanent

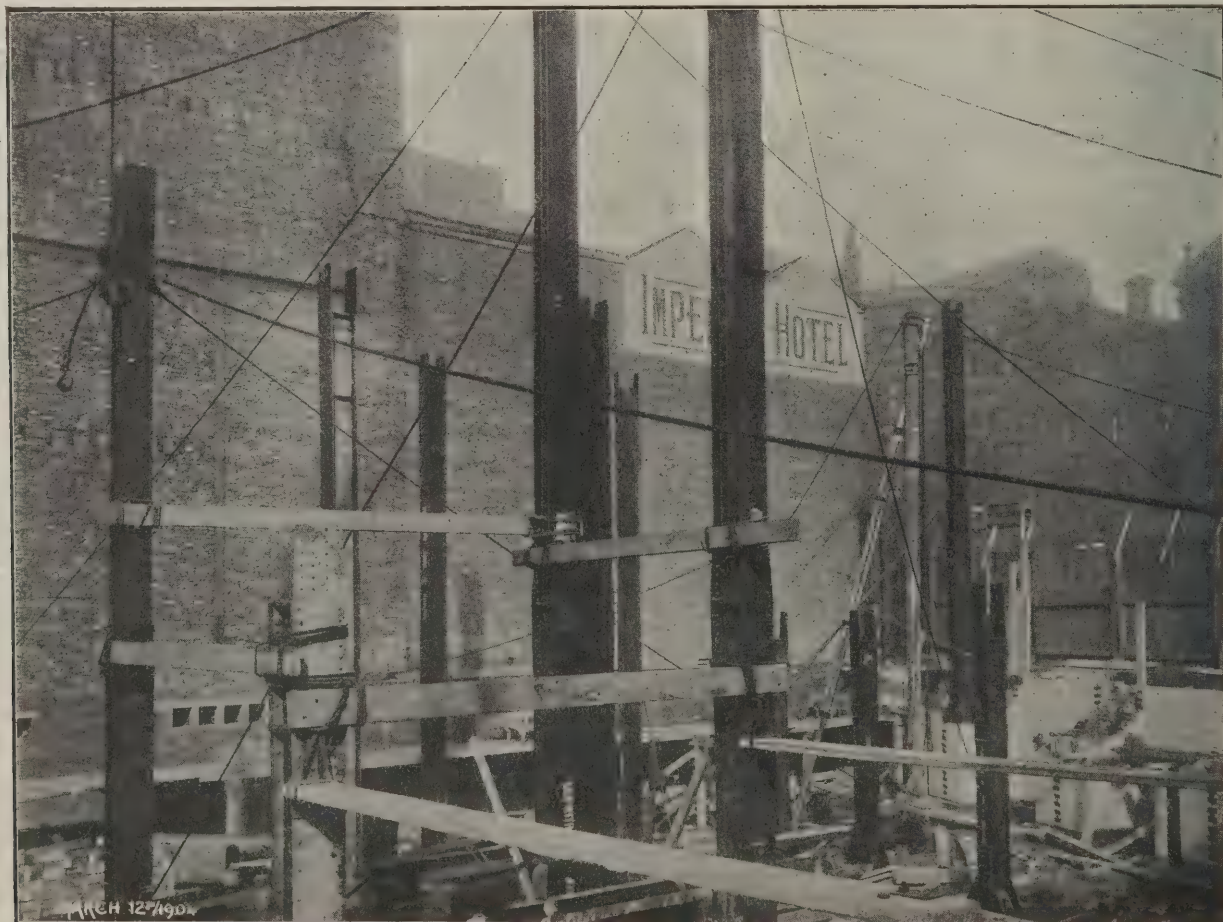
staff. (2) The staff of the architect to the Government of India consists mostly of natives, but application might be made to him direct. (3) There are openings in almost all our great Colonial cities, but it is generally necessary to be on the spot to take advantage of them. G. A. T. M.

Law Cases.

Compensation for Damage caused by "Tube."—On March 28th judgment was given in the case of *Elven v. The G.N. and City Railway Co.*, heard in the Under-Sheriff's Court. This claim arose out of damage sustained by Mr. Elven's premises, Nos. 52 and 54, City Road, by the construction of the above company's tube railway under the thoroughfare. The original claim was for £650. The jury awarded £540. Mr. E. Boyle, K.C., instructed by Mr. Hardman, conducted the case for the claimant, on whose behalf evidence was given by Mr. C. R. Mitchell, of Messrs. Mitchell & Raine, architects, and Mr. H. Collins. The cost of reinstating the premises was estimated at about £400, the balance of the claim being for loss of trade during the reinstatement.

HOYLE'S WAREHOUSE, MANCHESTER.

CONTINUING the series begun in our issue for last week, we now publish a third photograph showing the building of this warehouse, which is to be a steel framework throughout. This photograph, taken on March 12th, shows the result of another week's work. By comparison with the others it will be seen that the work is growing rapidly. As already announced in our columns, we shall continue to publish photographs week by week till the building is finished.



THE BUILDING OF HOYLE'S WAREHOUSE MANCHESTER (Photograph taken on March 12th). CHARLES HEATHCOTE AND SONS, ARCHITECTS.

THE LION OF CHAERONEA.

By JOHN HEBB, F.R.I.B.A.

"Shapes that seem alive,
Wrought in hard mountain marble, will survive
Their maker, whom the years to dust return!
Thus to effect cause yields."

"Michael Angelo," sonnet xvii (translated
by J. A. Symonds).

THE Greek Government, it is stated, are about to undertake the restoration of the tomb of the Thebans who fell at the battle of Chæronea (338 B.C.), between Philip of Macedon and the combined armies of the Athenians and Thebans, which resulted in the defeat of the latter and the destruction of Greek independence.

The tomb consisted of a lofty mound surmounted by a colossal figure of a lion, enclosed by a low wall within which the bodies of the slain were deposited in symmetrical rows. Milton alludes to the battle of Chæronea in his sonnet to the Lady Margaret Ley, "daughter to that good Earl" (the Earl of Marlborough) "once president of England's Council and her Treasury" as

"that dishonest victory

At Chæronea, fatal to liberty,
Killed with report that old man eloquent,"

referring to the story that Isocrates the orator and pupil of Socrates, then ninety-eight years of age, put an end to his life by starvation on hearing of the defeat of the Athenians.

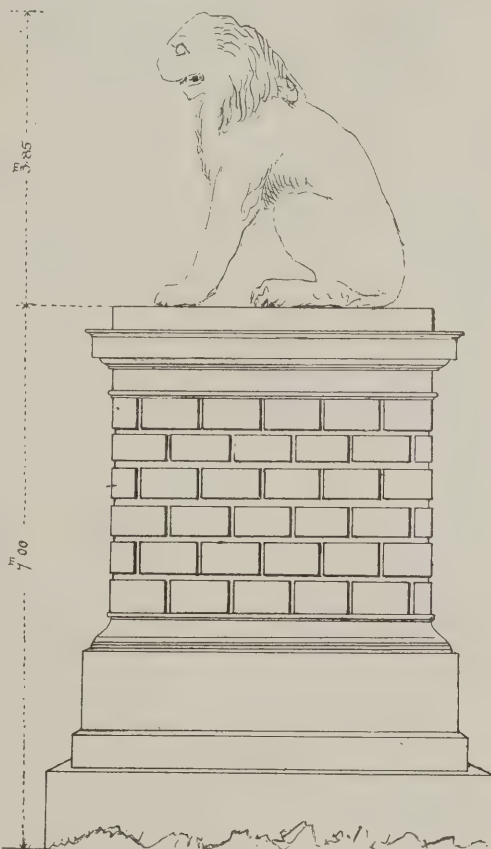
Chæronea was an ancient town in Bœotia, the site of which is now occupied by the modern Kapurna, five miles north of Lebadaia or Livadia in Greece. The condition of the tomb is thus described by Colonel Mure, who visited it in 1838:—

"About a mile or little more from the khan, on the right side of the road towards Orchomenos, is the sepulchre of the Bœotians who fell in the battle of Chæronea. At the period when this district was traversed by Leake, Dodwell or any other previous traveller to whose works I have had access, nothing was here visible but a tumulus. The lion by which Pausanias (Bœot. xl.) describes it as having been surmounted had completely disappeared. The mound of earth has since been excavated and a colossal marble lion discovered, deeply imbedded in its interior. This noble piece of sculpture, though now strewn in detached masses about the sides and interior of the excavation, may still be said to exist nearly in its original integrity. It is evident from the appearance of the fragments that it was composed from the first of more than one block, although not certainly of so many as its remains now exhibit. None of the fragments however seem to have been removed. The different pieces are so scooped out as to leave the interior of the figure hollow, with the two-fold object, no doubt, of sparing material and saving expense of transport. I could obtain no authentic information as to the period and circumstances of this discovery. The story told on the spot was that the celebrated patriot chief Odysseus [Androntsos], when in occupation of this district, had observed a piece of marble projecting from the summit of the mound, which, he further remarked, when struck produced a hollow sound. Supposing, therefore, according to the popular notion, that treasure might be concealed in the interior of the tumulus, he opened it up, and under the same impression broke the lion, which at that time was entire, into pieces; or as the tradition goes, blew it up with gunpowder. Another account is, that the lion was first discovered by that patriarch among the present race of Hellenic archæologists, the Austrian consul Gropius; Odysseus being only entitled to the credit of having severed it in pieces. That the Government, during the ten years of comparative tranquillity the country has now enjoyed, should have done nothing for its

preservation* is another proof how little the regeneration of Greece has done for that of its monuments.

"It would appear that the marble, with the lapse of ages, had gradually imbedded itself in the soft material that formed its base, so as finally to have sunk, not only beneath the surface of the tumulus, but, to judge from the appearance of the excavation, even of the plain itself—a remarkable instance of the effect of time in concealing and preserving as well as in destroying monuments of ancient art.

"This lion may, upon the whole, be pronounced the most interesting sepulchral monument in Greece—perhaps in Europe. It is the only one dating from the better days of Hellas—with the exception perhaps of the tumulus of Marathon—the identity of which is beyond dispute. It is also an ascertained specimen of the sculpture of the most perfect period of Greek art. That it records the last decisive blow beneath



SIEGEL'S RESTORATION OF THE LION AND PEDESTAL.

which Hellenic independence sank, never permanently to rise again, were in itself a sufficiently strong claim on our warmest sympathies."—"Tour in Greece," by Colonel William Mure, vol. 1, p. 218.)

A more recent traveller, Professor Mahaffy, gives the following account of the tomb in his "Rambles in Greece":—

"We had not gone a mile from the town [Kapurna] when we came upon the most pathetic and striking of all the remains in that country, the famous lion of Chæronea, which the Thebans set up to their countrymen who had fallen in the great battle against Philip of Macedon, in the year 338 B.C. . . .

"The mound where we found the lion was much humbler and smaller, in fact hardly a

mound at all, but a rising knoll, with its centre hollowed out, and in the hollow the broken pieces of the famous lion. It had sunk, we are told, into its mound of earth, originally intended to raise it above the road beside, and lay there in perfect safety till the present century, when four English travellers claim to have discovered it (June 3rd, 1818). They tried to get it removed, and failing in their efforts covered up the pieces carefully.* Since that time they seem to have lain undisturbed, and are still in such a state that a few days' labour and a few pounds of expense would restore the work. It is of bluish-grey stone—they call it Bœotian marble or limestone—and is a work of the highest and purest merit. The lion is of that Asiatic type which has little or no mane, and seemed to us couchant, or sitting, in attitude, with the head not lowered to the fore-paws but thrown up.† The expression of the face is ideally perfect—rage, grief and shame are expressed in it, together with that noble calmness and moderation which characterize all good Greek art."—(Mahaffy, "Rambles in Greece," 3rd edition, 1887, p. 232.)

The four travellers by whom the lion was discovered in 1818 were John Sanders, a retired architect and Soane's first pupil; William Purser, his artist (it was the custom in those days for travellers to be accompanied by an artist); Edward Cressy, joint author with G. L. Taylor of the "Antiquities of Rome"; and George Ledwell Taylor.

In the "Literary Gazette," April 24th, 1824, there is an account of the discovery, written at the time by Cressy and communicated to William Jerdan, the editor, but not published until six years after the event.

"The earth removed," says Cressy, "contained pieces of stone and cement that had formed a part of the foundation or pedestal upon which it [the lion] had been placed.

Holland in his very accurate and interesting tour describes the plain of Chæronea, and alludes to the victory obtained there B.C. 338 by Philip [of Macedon] over the combined armies of the Athenians and Thebans, by which he gained dominion over Greece; and this author further observes 'that nothing is here to be seen of the Theban lion of Chæronea; but it is possibly buried underground, and may yet reward the search of some future traveller.'

The lion which marks the tomb of the Sacred Band of three hundred Thebans who till then had never been conquered is described by Pausanias (lib. ix., ch. 40).

The second and most celebrated battle between the Athenians and Macedonians was fought at Chæronea, August 7th, 338 B.C., and in this battle Philip of Macedon by overthrowing the united forces of the Athenians and Bœotians succeeded in crushing for ever the liberties of Greece. Strabo states that it was in memory of a famous band of three hundred Thebans, most of whom fell in this battle, that a sepulchre was erected and, Pausanias adds, surmounted by a lion as the emblem of a spirit that had animated these Thebans—a monument of even greater value for us as no record has come down to our times with any details of that famous day.

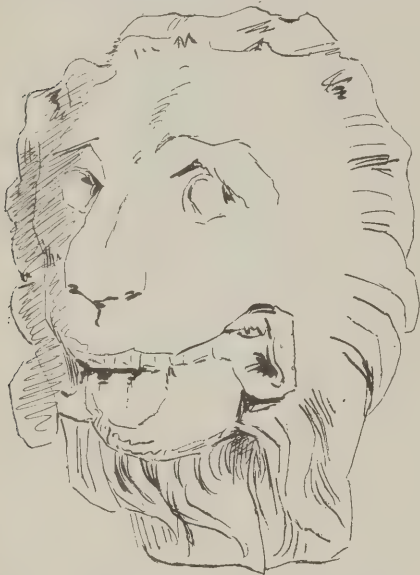
* An account of the discovery by the only surviving member of the party, Mr. G. L. Taylor, has been published by Mr. W. S. Vaux, in the Transactions of the Royal Society of Literature, 2nd series, vol. viii., p. 159q. The latter gentleman called attention to his paper when the subject was being discussed in the Academy in 1877.

† Mr. Taylor and his friends thought it must have stood in the attitude of the now abolished lion on the top of Northumberland House. This does not appear so to us; but it is difficult to decide. The restoration by Siegel in the Mon. of the Soc. Arch. of Rome for 1856, of which Mr. Murray most kindly sent me a drawing, makes the posture a sitting one, like that of the sitting lion in front of the Arsenal at Venice. There is a small sitting lion from Calymnae of the same posture in the British Museum. The Greeks are now fully alive to the value of the monument and anxious for its restoration. There had been a custodian appointed to watch over it, even when I was there, but he chanced to be absent when we paid our visit."

* "It is stated in a letter from Athens of date June 18th, 1840, inserted in the 'Literary Gazette' of July 11th, 1840, to be the intention of the Government to remove this lion to the capitol, and erect it on a suitable pedestal on some commanding situation. This plan will be favourable, perhaps, to its preservation; but the monument never can possess the same degree of classic interest on any other spot as that which now attaches to it on the one where it was originally erected."

From the time of Pausanias to the visit of Mr. Taylor and party, the existence of the lion remained wholly unknown; and we have the successive testimony of Gell, Dodwell, Leake and Hammond that they sought for it in vain within the district where they reasonably hoped to find it.

With regard to the posture of the lion, Sir Thomas Wyse remarked to Mr. Newton "that the lion of Chæroneia being the emblem of a defeat, is placed in an attitude expressive of angry defiance; while the head of the Cnidian lion [discovered and brought to England by Mr. Newton] being one of natural repose, seems rather the symbol of a victory."



HEAD OF LION, HALICARNASSUS MAUSOLEUM.

Göttling (Carl Wilhelm), who saw the lion in the course of his travels in 1840, describes it at that time as being broken in seven pieces ("Gesammelte Abhandlungen," i, pp. 147-53). "The pieces," he remarks, "do not present any indications of violent fracture, and there can be no doubt that when the artificial mound upon which the lion was placed began to subside, the lion fell down of itself, it having been formed of several pieces, the body of the lion being hollow, probably with a view to diminish the weight." In 1880 the Archaeological Society of Athens set aside a sum of 90,000 francs (£3,600) for the restoration of the tomb, but the work was not carried out. Some excavations, however, were made about this date within the peribolus or enclosure of the tomb with the result that several skeletons were discovered which crumbled to dust on being exposed to the air.

Christian Heinrich Siegel, of Wandsbeck, near Hamburg, a Prussian sculptor settled at Athens, made a design for the proposed restoration of the lion on a lofty pedestal, which was published in the "Annali della Corrispondenza Archeologica di Roma" for the year 1856, with a description by F. G. Welcker. Siegel executed in 1834 the colossal lion carved out of the solid rock at Nauplia to commemorate the Bavarians who fell in the war for Greek independence. In a letter to Welcker, Siegel explained that the fore part of the right paw and several portions of the body were missing, and the hinder paws were said to have been detached and carried off by Prince Puckler-Muskau. At that time several pieces of the pedestal were said to be built into a wall in the neighbourhood. Siegel's pedestal was copied from a portion of the temple of Theseus with some modifications. This pedestal was intended to be 7 metres (or 22ft. 9in.) high. The height of the lion Siegel computed to be about 4 metres (13ft.), or, to be exact, 3'85 metres. Siegel's drawing of the proposed restoration

of the lion and pedestal is reproduced in G. L. Taylor's Autobiography, p. 112.

Louis Dupré, a French artist, and pupil of David, published in 1825 a collection of views and costumes illustrative of a journey to Athens and Constantinople. One of the plates in this work (plate xvii.) represents a Tartar soldier restraining a restive horse, with the fragments of the lion at Chæroneia as a background. Only two fragments of the lion are shown in this drawing—the head, which is lying on its right side, and a portion, apparently of the body, but not the paw, a cast of which, with the head, are preserved in the basement of the British Museum.

It is to be hoped that no attempt will be made to restore the lion, that is to say, to replace the missing portions, which must be considerable, with new stone wrought in imitation of the old work, still less to place the lion upon a pedestal copied from some ancient example as proposed by Siegel. It may be desirable to put together the scattered fragments and to supply the missing portions by rough blocks of stone, which should be of a different colour to the old work so as to be readily distinguishable. It appears doubtful whether the lion was ever raised upon a pedestal, notwithstanding Siegel's assertion that he had found portions of this pedestal embedded in a wall, or, if there was a pedestal, that it was covered with earth and was not of an architectural character. It is of the greatest importance that the figure of the lion should be retained *in situ* as marking the scene of one of the most memorable events in Greek history, and should not be transported to Athens, as was once proposed, or be stored in a museum, in which case its meaning and pathetic associations would be lost. The enclosure of the tomb might be repaired where necessary, and the site preserved as an historic monument.

Builders' Notes.

The Isolation Hospital, Llantrisant, is being warmed and ventilated by means of Shorland's patent Manchester stoves, grates and ventilators, supplied by Messrs. E. H. Shorland & Brother, of Manchester.

The Regulations for the Demolition of Buildings proposed by the Corporation of London to prevent the dust nuisance have been revised by the Local Government Board, but remain much the same as published in our issue for August 26th last.

Homan's Fireproof Floors.—The guardians of the Bradford Union and their architect, Mr. Fred Holland, of Bradford, recently had fireproof floors made by the leading specialists with the object of ascertaining the best and most suitable system for their new infirmary. After exhaustive trials and tests they adopted Homan's fireproof floor, and the order for the work has been placed with Messrs. Homan & Rodgers, of Manchester. This firm is also now laying their flooring to the workhouse infirmaries at Stockport, Ormskirk, Tamworth and Driffield.

The Hennebique System of Ferro-concrete Construction was put to a severe test in the recent great fire at Baltimore, U.S.A. In the annex building of the U.S. Fidelity and Guaranty Co., 111, East German Street, five ferro-concrete floors and a roof supported by ferro-concrete pillars had been constructed between old brick walls, thus making a fireproof monolithic building from foundations to roof. During the fire the front brick walls of the structure gave way, but the whole of the ferro-concrete work remained intact amongst the ruins, being the only standing building in the block: thus proving very emphatically the excellence of this system of construction.

A SCOTCH IRONWORKS.

LAST Saturday week a party of fifty members of the Edinburgh Architectural Association visited the Gothic Ironworks, Camelon, Falkirk, by the courtesy of Messrs. R. & A. Main, Ltd., the proprietors. The party was shown over by Mr. R. B. Main and Mr. A. P. Main, managing directors. The employees had been kept specially working during the afternoon, so that the visitors might be able to see the works in full operation. The Gothic Ironworks is a very commodious establishment, covering an area of 10 acres, most of which is already built upon. Three years ago the firm migrated to Camelon from Glasgow, where limited space retarded development, and the buildings which have been erected are up-to-date in every respect. It is expected that, with the development of the light castings trade, further extensions will be necessary in the near future. The works are thoroughly self-contained, the only manufactured material imported into the factory being the brass work, which is obtained from the firm's own manufactory in Birmingham, controlled by Messrs. Thomas Glover & Co., Ltd., with whom Messrs. Main are now amalgamated. It is interesting to note that Messrs. Glover, who are the original patentees of the dry gas meter, were established in 1844 and are celebrating this year their sixtieth anniversary.

In the pattern-shop the various processes in connection with the making of wood, tin and iron patterns were fully explained and illustrated. Proceeding to the moulding-shop, full explanations were given of the moulding from loose and plate patterns, and special attention was directed to cored castings, of which Messrs. Main manufacture a very large quantity. The process of dressing and cleaning the castings was also shown—some of the machinery for dressing and burnishing being much admired. In the fitting-shop a large number of gas-stoves, ranges and registers were seen in course of construction; and in the tin and copper shop much interest was taken in the making of gas-stove pans and copper water-heaters and boilers. In the electro-plating department the various processes involved in the nickel-plating, brassing and bronzing of cast-iron were explained, as also the processes which had to be gone through in the work of enamelling and Berlin-blackening. A shop of particular interest was the meter department and the meter-testing station. The station was erected by the firm at considerable cost, the sanction of the Board of Trade having first to be obtained, and it is conducted under the authority of the Falkirk Town Council, who have an official—Mr. Buchan, the lighting inspector—in the station when required. By the erection of this meter-testing station—one of the few in Scotland—the necessity of sending the meters manufactured in the works to Edinburgh or Glasgow for the purpose of being tested is obviated, and both time and expense are thereby saved. The manufacture of meters is a branch of the trade Messrs. Glover are rapidly developing, and it says much for the enterprise of the firm that they have gone to the expense of establishing the testing station to facilitate the work. Besides the manufacture of the ordinary tin-cased gas meters and penny-in-the-slot meters, the firm have for some time been making cast-iron meters. This is a new industry in Falkirk. It may be mentioned that Falkirk and Edinburgh are the only towns in Scotland where gas meters are manufactured.

After the inspection of the works the visitors were entertained in the large dining-hall in connection with the works. Mr. Thomas Ross, on behalf of the Architectural Association, proposed a vote of thanks to Messrs. Main, and Mr. R. B. Main responded.

Bankruptcies.

[Abbreviations: R.O.—receiving order; P.E.—public examination; C.C.—county court; O.R.—official receiver; Adj.—Adjudication.]

G. P. BAGULEY, plumber, Ilkeston. Adj. March 21st.
R. PARKER & Co., timber merchants, Liverpool. R.O. March 22nd.

W. TURNBULL, builder, Horley. R.O. March 22nd.

J. PARKER, builder, Hastings. Adj. March 26th.

H. KEMP, builder, Hull. R.O. March 25th.

R. J. BLAKE & Co., timber merchants, Ilford. R.O. March 21st.

J. E. KITTON, timber merchant, Barking. P.E., Chelmsford Shirehall, May 4th, at 10.

G. ANDERSON, plumber and painter, Manchester. R.O. March 23rd.

BELL & MAHER, builders and contractors, Prescott. Adj. March 22nd.

J. C. W. PEARCE, builder, Beeston. P.E., Nottingham C.C., April 8th, at 10.30.

C. GREEN & Co., builders and contractors, Rotherham. First meeting, O.R.'s, Sheffield, April 7th, at 1. P.E., same C.C., April 21st, at 2.

T. W. ROOME, brick manufacturer, Rawmarsh. First meeting, O.R.'s, Sheffield, April 7th, at 12.30. P.E. Sheffield C.C., April 21st, at 2.

W. W. FREEMAN, builder and contractor, Chester. First meeting, Crypt Chambers, Eastgate Row, Chester, April 8th, at 2.45. P.E., The Castle, Chester, April 26th, at 11.

Coming Events.

Wednesday, April 6.

EDINBURGH ARCHITECTURAL ASSOCIATION (Associates' Section).—Mr. J. Douglas Trail on "Notes on the Uses of Woods for Internal Work," at 8 p.m.

BUILDERS' FOREMEN AND CLERKS OF WORKS' INSTITUTION.—Ordinary Meeting of the Members, at 8 p.m.

Friday, April 8.

JUNIOR INSTITUTION OF ENGINEERS.—Mr. Kenneth Gray on "Heating and Ventilation of Factories," at 8 p.m.

GLASGOW TECHNICAL COLLEGE ARCHITECTURAL CRAFTSMEN'S SOCIETY.—Business Meeting, at 8 p.m.

Saturday, April 9.

INCORPORATED BRITISH INSTITUTE OF CERTIFIED CARPENTERS.—Mr. H. Eustice on "Timbering in Mines," at 6 p.m.

Monday, April 11.

SOCIETY OF ENGINEERS.—Ordinary Meeting, at 7.30 p.m.

INSTITUTE OF SANITARY ENGINEERS, LTD.—Meetings of Examination and Literary Committee at 4 p.m.; Organizing Committee at 6 p.m.; and By-Laws Committee at 7 p.m.

BRISTOL SOCIETY OF ARCHITECTS.—Annual General Meeting at 8 p.m. Election of Council and Officers.

SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part II.).—Mr. W. Hunting on "Signs of Health and Disease in Animals destined for Food," at 7 p.m.

Tuesday, April 12.

INSTITUTION OF CIVIL ENGINEERS.—Mr. Edwin William De Russett, M.I.C.E., on "Recent Developments in Cargo and Intermediate Steamers," at 8 p.m.

Wednesday, April 13.

INSTITUTE OF SANITARY ENGINEERS, LTD.—Meetings of General Purposes and Finance Committee at 4 p.m., and Election Committee at 5.15 p.m. Mr. A. H. Scott on "Combined Drainage," at 7 p.m.

SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part II.).—Mr. W. Hunting on "The Names and Situations of the Organs of the Body in Animals," at 7 p.m. Inspection and Demonstration at the London Soap Works, Bow, at 3 p.m., arranged by Messrs. E. Cook & Co., Ltd.

INSTITUTION OF CIVIL ENGINEERS.—Students' Visit to the works of the Great Northern, Piccadilly and Brompton Railway, in course of construction, at 2.30 p.m.

Complete List of Contracts Open.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
BUILDING:			
April 7	Kendal—Additions, &c.	W. H. Somervell	J. F. Curwen, 26 Highgate, Kendal.
" 7	Stepney—Electricity-Generating Station..	Borough Council	M. W. W. Jameson, 15 Alle Street, Whitechapel, E.
" 7	Hove—Church and Schools	—	E. J. Hamilton, 2 New Road, Brighton.
" 7	Roscuden—Chapel	—	E. A. Coombe, Porthleven.
" 7	Chelmsford—Shedding, &c.	Essex Agricultural Society ..	F. Taylor, 17 Duke Street, Chelmsford.
" 7	Lockwood, near Huddersfield—Two Dwelling-Houses	—	J. Berry, 3 Market Place, Huddersfield.
" 7	Marsden, Yorks—Two Shops and Three Houses	—	J. Kirk & Sons, Architects, Huddersfield.
" 7	Swansea—Church	W. T. Rice	E. M. B. Vaughan, Architect, Swansea.
" 8	Grimsby—Stable, &c.	Household Scavenging Sub-Com.	H. G. Whyatt, Borough Surveyor, Town Hall Square, Grimsby.
" 8	Oswaldtwistle—Alterations to School	—	C. Hansford, 40 Park Road, Accrington.
" 8	Walthamstow—Electricity-Generating Station ..	Urban District Council	G. W. Holmes, Engineer, Town Hall, Walthamstow.
" 8	Selly Oak, near Birmingham—Depot, &c.	King's Norton and Northfield Urban District Council.	A. W. Cross, 23 Valentine Road, King's Heath.
" 8	Sheffield—Crematorium	Burial Grounds Sub-Committee	C. Hadfield, Architect, Cairns Chambers, St. James St., Sheffield.
" 9	London, W.—Lime, Cement, Bricks, &c. ..	Paddington Borough Council ..	Borough Surveyor, Town Hall, Paddington, W.
" 9	Barry, Cardiff—Sixteen Houses	—	E. David & David, 27 High Street, Cardiff.
" 9	Burnley—Manual Instruction Room	—	G. H. Pickles, Borough Surveyor, Town Hall, Burnley.
" 9	Penarth, Wales—Library, &c.	Urban District Council	H. Snell, Architect, Stanwell Road, Penarth.
" 10	Askwith, near Otley, Yorks—Residence ..	—	Empsall & Clarkson, 7 Exchange, Bradford.
" 11	Egremont, Cumberland—Alterations to Premises	Industrial Co-op. Society, Ltd. ..	W. G. Scott & Co., Architects, Victoria Buildings, Workington.
" 11	Limerick—Library	Trustees	G. P. Sheridan, 25 Suffolk Street, Dublin.
" 12	Bristol—Police and Fire Station	Watch Committee	City Engineer, 63 Queen Square, Bristol.
" 12	Mortlake—Wall, &c.	Urban District Council	G. B. Toms, Surveyor, Council Offices, High Street, Mortlake.
" 12	London, S.W.—Building Materials (Two Contracts)	Prison Commissioners	Prison Department, Home Office, Whitehall, S.W.
" 12	Homerton, N.E.—Laundry Buildings	Metropolitan Asylums Board ..	W. T. Hatch, Engineer, Board's Offices, Embankment, E.C.
" 12	Barnes—Wall	Urban District Council	G. B. Toms, Surveyor, Council Offices, High Street, Mortlake.
" 13	Blackpool—Underground Convenience	Corporation	J. S. Brodie, Borough Surveyor, Town Hall, Blackpool.
" 13	Farnham—Two Bedrooms at Workhouse ..	Guardians	Friend & Lloyd, Architects, Grosvenor Road, Aldershot.
" 13	Great Broughton, Cumberland—Two Houses	Rev. A. Greer	W. G. Scott & Co., Architects, Victoria Buildings, Workington.
" 14	Airdrie, Scotland—Post Office	Commissioners of H.M. Works, &c.	Secretary, H.M. Office of Works, &c., Storey's Gate, London, S.W.
ENGINEERING:			
April 7	Manchester—Generators, &c.	Electricity Committee	F. E. Hughes, Secretary, Electricity Dept., Town Hall, Manchester.
" 7	Derby—Sewerage Works	Corporation	J. Mansergh & Sons, 5 Victoria Street, Westminster.
" 7	Glasgow—Electric Lighting Installation ..	Corporation	D. M'Coll, 64 Cochrane Street, Glasgow.
" 7	Ventnor, Isle of Wight—Timber Groyne ..	Urban District Council	Surveyor, Town Hall, Ventnor.
" 9	Ramsgate—Reconstructing Promenade ..	Corporation	T. G. Taylor, Borough Engineer, Albion House, Ramsgate.
" 9	York—Sidings	Corporation	A. Creer, City Engineer, York.
" 9	Natal, South Africa—Electric Telpherage ..	Government of Natal	Sir Walter Peace, 26 Victoria Street, Westminster, S.W.
" 9	Harrogate—Waterworks	Corporation	E. W. Dixon, 14 Albert Street, Harrogate.
" 9	Malaga, Spain—Tramway Concession	—	Secretariat of the Ayuntamiento, Office of Public Works, Malaga.
" 11	Glasgow—Renewal of Bridge Superstructure	Caledonian Railway Co.	J. Blackburn, 302 Buchanan Street, Glasgow.
" 11	Waterford, Ireland—Bridges	County Council	K. G. Paul, Secretary, County Council, Dungarvan.
" 11	Burnley—Reservoir, Laying Pipes, &c. ..	Rural District Council	S. Edmundson, 18 Nicholas Street, Burnley.
" 12	India Office, S.W.—Locomotives	Metropolitan Asylums Board ..	Director-General of Stores, India Office, Whitehall, S.W.
" 12	Homerton, N.E.—Alterations to Engineering Arrangements	Town Council	W. T. Hatch, Engineer, Board's Offices, Embankment, E.C.
" 12	Partick, Scotland—Dynamo, &c.	—	Kincaid, Waller, Manville and Dawson, 29 Great George Street Westminster, S.W.
" 12	Huddersfield—Purifier Covers	Gas Committee	E. A. Harman, Engineer, Gasworks, Huddersfield.
" 12	London, E.C.—Deck Bridges, &c.	Central India Railway Co. ..	T. W. Wood, Secretary, Gloucester House, Bishopsgate Street, Without, E.C.
" 12	Rochdale—Sewage-Disposal Works	Paving, &c. Committee	S. S. Platt, Borough Surveyor, Town Hall, Rochdale.
" 13	London, E.C.—Electric Plant	East India Railway Co. ..	C. W. Young, Secretary, Nicholas Lane, London, E.C.
" 13	Manchester—Generators, &c.	Corporation	F. E. Hughes, Secretary, Electricity Dept., Town Hall, Manchester.
" 15	Cavan, Ireland—Road Roller	County Council	W. Finlay, Secretary, Cavan County Council, Court House, Cavan.
IRON AND STEEL:			
April 7	London, E.C.—Railway Stores	Great Indian Peninsular Ry. Co.	J. I. Berry, Secretary, 48 Copthall Avenue, London, E.C.
" 9	London, S.E.—Railway Stores	South-Eastern and Chatham Railway Co.	Superintendent of Stores, 84 Tooley Street, S.E.
" 9	London, W.—Iron and Steel	Paddington Borough Council ..	Borough Surveyor, Town Hall, Paddington, W.
" 11	Burnley—Pipes	Rural District Council	S. Edmundson, 18 Nicholas Street, Burnley.
" 11	Belfast—Keel Blocks	Harbour Commissioners	G. F. L. Giles, Harbour Engineer, Belfast.
" 11	Edinburgh—Stores	Corporation	Chief Engineer, Gasworks, New Street, Edinburgh.
" 13	Cardiff—Railway, &c.	Corporation	W. Harpur, Borough Engineer, Cardiff.
" 13	Adelaide, Australia—Railway Stores ..	—	Agent-General for South Australia, London.
PAINTING AND PLUMBING:			
April 8	Harwich—Painting	—	H. Ditcham, Borough Surveyor, Harwich.
" 9	London, S.E.—Paints, Lead, &c.	South-Eastern and Chatham Railway Co.	Superintendent of Stores, 84 Tooley Street, S.E.
" 9	London, W.—Painting Materials	Paddington Borough Council ..	Borough Surveyor, Town Hall, Paddington, W.
" 11	Fulham—Painting, &c.	Borough Council	F. Wood, Borough Engineer, Fulham, S.W.
" 11	Leeds—Cleaning down and Painting, &c. Police Stations	—	City Engineer, Leeds.
" 11	London, S.W.—Painting, &c., at Library ..	Fulham Borough Council ..	F. Wood, Borough Engineer, Fulham, S.W.
" 11	Edinburgh—Oils and Paints	Corporation	Chief Engineer, Gasworks, New Street, Edinburgh.
" 12	Leavesden—Painting	Metropolitan Asylums Board ..	T. D. Mann, Clerk, Board's Offices, Embankment, E.C.
" 12	Woodwich—Painting at Hospital	Metropolitan Asylums Board ..	T. D. Mann, Clerk, Board's Offices, Embankment, E.C.
" 12	Watford, Herts—Painting, &c., at Asylum	Metropolitan Asylums Board ..	W. T. Hatch, Engineer, Board's Offices, Embankment, E.C.
" 12	South Tottenham—Painting, &c., at Hospital	Metropolitan Asylums Board ..	W. T. Hatch, Engineer, Board's Offices, Embankment, E.C.

Complete List of Contracts Open—continued.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
ROADS AND CARTAGE:			
April 7	Lanchester—Materials	Rural District Council	W. Cumming, Highway Surveyor's Office, Lanchester.
" 7	Southend-on-Sea—Making up	Corporation	E. J. Elford, Borough Surveyor, Southend-on-Sea.
" 7	Weymouth—Making-up (Two contracts)	Town Council	Borough Surveyor, Market Street, Melcombe Regis.
" 8	Midsomer Norton, Somerset—Materials, &c.	Urban District Council	Surveyor, Midsomer Norton.
" 9	London, W.—Materials	Paddington Borough Council	Borough Surveyor, Town Hall, Paddington, W.
" 9	Gloucester—Stone and Hauling	Rural District Council	F. E. Weaver, Srvy., Lipton Chambers, Northgate St., Gloucester.
" 11	Jarrow—Street Works	Urban Sanitary Authority	J. Peetree, Boro' Surveyor's Office, Accra House, Grant St., Jarrow.
" 11	Rochford, Essex—Road Material, &c.	Rural District Council	F. Gregson, Clerk, Southend-on-Sea.
" 11	Ryton-on-Tyne—Footways	Urban District Council	J. P. Dalton, Surveyor, Council Offices, Ryton-on-Tyne.
" 11	Sevenoaks—Street Works	Urban District Council	S. Towlson, Surveyor, Argyle Street, Sevenoaks.
" 11	Westbury, Wilts—Steam Rolling and Scarifying	Rural District Council	W. H. Stanley, Dist. Srvy., Market House Chambers, Trowbridge.
" 11	Magor, Mon.—Metalling	Rural District Council	J. Thomas, Clerk, Union Offices, Queen's Hill, Newport, Mon.
" 11	St. Mellons, near Cardiff—Metalling	Rural District Council	Union Offices, Queen's Hill, Newport, Mon.
" 12	Ashford, Kent—Materials, &c.	Rural District Council	A. Simms, Surveyor, Charing.
" 12	Bognor, Sussex—Tar Paving	Urban District Council	O. A. Bridges, Surveyor, Bognor, Sussex.
" 14	Helmshay, Yorks—Whinstone and Slag	Urban District Council	R. Pearson, Clerk, Helmsley.
" 19	Carshalton—Making-up	Urban District Council	W. W. Gale, Surveyor, Council Offices, High Street, Carshalton.
" 20	Houghton-le-Spring, Durham—Materials	Rural District Council	D. Balfour, Surveyor, Houghton-le-Spring, R.S.O.
" 20	London, S.W.—Making-up	Fulham Borough Council	F. Wood, Borough Surveyor, Town Hall, Fulham, S.W.
" 21	Cheshunt—Channelling	Urban District Council	R. H. Jeffes, Surveyor, Manor House, Cheshunt.
" 21	Oakham—Materials	Rutland County Council	E. A. Adam, Clerk, Oakham.
" 25	Uxbridge—Granite	Urban District Council	W. T. Harvey, 61 High Street, Uxbridge.
SANITARY:			
April 9	London, W.—Disinfectants	Paddington Borough Council	Borough Surveyor, Town Hall, Paddington, W.
" 11	London, N.—Sewers, &c.	Hornsey Town Council	E. J. Lovegrove, Borough Surveyor, Southwood Lane, Highgate, N.
" 11	Buncrana, Ireland—Drainage and Sewerage Works	Rural District Council	T. A. Hall, Engineer, Pennyburn, Desry.
" 11	Dorc and Totley, near Sheffield—Emptying Ashpits, &c.	Rural District Council	W. Clarkson, Clerk, The Edge, Sheffield.
" 12	Ivybridge, Devon—Sewerage Works	Urban District Council	Cameron, Comm'n & Martin, 1 Victoria Street, Westminster.
" 12	Bannockburn, Scotland—Drainage Works	Stirlingshire County Council	M'Luckie & Walker, 15 Dumbarton Road, Stirling.
" 12	Tutbury, near Burton-on-Trent—Drain Connections	Rural District Council	Willcox & Raikes, 63 Temple Row, Birmingham.
" 12	Leicester—Sewers	Highway & Sewerage Committee	E. G. Mawby, Borough Surveyor, Town Hall, Leicester.
" 30	Bollington, near Macclesfield—Sewerage Works	Urban District Council	W. H. Radford, Engineer, Albion Chambers, King St., Nottingham.
TIMBER:			
April 9	London, W.—Timber	Paddington Borough Council	Borough Surveyor, Town Hall, Paddington, W.
" 11	Edinburgh—Timber	Corporation	Chief Engineer, Gasworks, New Street, Edinburgh.
" 11	Dewsbury—Wood-paving Blocks	Corporation	Borough Surveyor, Town Hall, Dewsbury.
" 18	Dundalk, Ireland—Sleeper Blocks	Gt. Northern Rly. Co. (Ireland)	T. Morrison, Secretary, Amiens Street Terminus, Dublin.

List of Competitions Open.

DATE OF DELIVERY.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	DEPOSIT REQUIRED FOR CONDITIONS, &c.	BY WHOM ADVERTISED.
April 8	Malvern—Library	£30, £20, £10.	10s. 6d.	H. L. Whatley, Clerk, Council Offices, Malvern.
" 9	Calne, Wilts—Library	—	—	G. I. Gough, Town Clerk's Office, Calne.
" 23	Llandilo, Wales—Drainage Scheme	—	—	E. Jones, Glancennan, Llandilo.
" 30	Newcastle-upon-Tyne—Grammar School	£100, £50, £25.	£1 1s.	H. J. Criddle, 2 Collingwood Street, Newcastle-upon-Tyne.
May 9	Barnet—Hospital	—	—	C. D. Byfield, 16 High Street, Barnet.
" 31	Stamford, Lincs—Public Library	£25, £15, £10.	£1 1s.	C. Atter, Town Clerk, Town Hall, Stamford.

Tenders.

Information from accredited sources should be sent to "The Editor" at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Addressed postcards on which lists of tenders may be stated will be sent post free on application to the Manager, BUILDERS' JOURNAL, 6, Great New Street, Fetter Lane, E.C.

Appleby, Westmorland.—For the erection of a vestry at St. Lawrence Church. Mr. Ernest E. Shepherd, Nuneaton, architect:—

Masonry.	
R. B. Hodgson	£265 0 0
J. Robinson*	153 5 4
Carpenter and joiner.	
Richardson & Bird	114 0 0
Thomas Slack*	97 10 0
Plumber.	
J. & W. Scott	24 0 0
W. Tydd*	22 2 6
Painter.	
J. & W. Scott	10 10 0
W. Tydd*	10 5 6
Slater and plasterer.	
G. Potts	35 13 0
J. Dodgson*	35 9 4
* Accepted. [All of Appleby.]	

Barnard Castle.—For alterations and additions to 41, Newgate, Barnard Castle, for Mr. F. W. Raper, Mr. T. Farrow, architect, 7, Market Place, Barnard Castle. Quantities by architect:—

Bricklayer and mason.	
J. Kyle & Sons,* Barnard Castle.	
R. Wilson, Barnard Castle.	
Joiner.	
T. Borrowdale & Son,* Barnard Castle.	
G. P. Robinson, Lartington.	
J. Kyle & Sons, Barnard Castle.	
Plumber.	
C. W. Stockdale, Barnard Castle.	
C. E. Raime, Barnard Castle.	
G. W. Jackson, Barnard Castle.	
Slater.	
J. Lancaster,* Barnard Castle.	
J. & R. Mascal, Bishop Auckland.	
Plasterer.	
F. Welford,* Barnard Castle	

Painter.
R. Brotherton,* Barnard Castle.
J. Wrathall, Barnard Castle.
P. Robinson, Barnard Castle.
* Accepted.

Brighton.—For the erection and completion of proposed new converter house, cable culverts, &c., adjoining the Corporation electricity works, North Road, for the Corporation:—

J. Longley & Co., Crawley	£6,389
F. G. Minter, Putney	6,237
F. Gough & Co., London	6,154
Sattin & Evershed, Brighton	6,150
J. Parsons & Sons, Hove	6,090
Hockley & Co., Grantham	5,950
R. Cook & Sons, Crawley	5,919
W. A. Field & Co., Brighton	5,884
Foster Brothers, Norwood Junction	5,875
Rowland Brothers,* Horsham	5,699
* Accepted.	

Bristol.—For rebuilding the Foresters' Arms, for Messrs. Thatcher's Breweries, Ltd. Messrs. C. & C. Thompson, architects, Athenæum Chambers, Bristol. Quantities by Mr. H. J. Pearson, Bristol:—

R. Wilkins & Sons	£1,429
W. Cowlin & Son	1,419
E. Love	1,387
W. Foster	1,375
A. E. Denby & Co.	1,339
W. & J. Bennett	1,330
C. A. Hayes	1,323
F. Chown	1,298
E. C. Norris*	1,205
* Accepted.	

Deal.—For the proposed rebuilding of the "Jolly Gardener" public-house, and other works in connection therewith, at Deal. Messrs. W. J. Jennings & J. F. Duthoit, architects, Dover and Canterbury:—

J. E. Turner, Walmer	£1,494 9 0
G. B. Cotton, New Street	1,490 0 0
W. H. Grigg, Dover	1,480 0 0
G. Keeler, Crabble, Dover	1,471 0 0
T. T. Denne, Walmer	1,460 0 0
E. Trevers, Blenheim Road	1,423 0 0
T. Turner & Co., Mill Road	1,415 0 0
G. H. Denne & Son, Queen Street	1,388 0 0
J. E. Hayward & Son,* Wellington Road	1,387 0 0
* Accepted. [Rest of Deal.]	

Gateshead.—For erecting a workshop and warehouse in Sun Street, for Mr. H. Hall. Mr. J. M. Dingle, architect, 3, Ocean Road, South Shields. Quantities by Mr. William Morton, Sunderland:—

H. & S. Watson	£1,653 16 8
W. Emmet & Co.	1,498 10 1
J. McGowan	1,453 2 9

C. T. George	£1,440 0 0
R. M. Gibson	1,421 13 8
W. Franklin	1,408 8 9
J. Bewley	1,400 0 0
J. Hyers	1,386 10 6
J. Milne	1,375 0 0
Glen & Moffett	1,334 7 8
F. Hutchinson	1,326 5 8
H. & B. Arkless	1,315 1 0
W. C. Tyrie	1,311 11 6
J. McElhatton	1,284 4 10
W. Hall	1,288 18 11
R. M. Storey	1,270 7 0
T. & J. White,* Newcastle	1,223 4 3
* Accepted	

Hull.—For the erection of a riding school and headquarters for the Hull (A) Squadron of the East Riding of Yorkshire Imperial Yeomanry, in Walton Street, Hull, for the Officer Commanding, Lieut.-Colonel the Right Hon. Lord Wenlock, V.D. Messrs. Thompson & Kirtan, architects, Exchange Buildings, Lowgate, Hull. Quantities by the architects:—

Bowman	£1,825 0 0
Arnott	1,784 11 0
Jackson & Sons	1,704 18 3
Longden & Son, Sheffield	1,635 0 0
Kaye	1,680 0 0
G. Houlton	1,678 0 0
Good & Son, Ltd.	1,675 0 0
G. L. Scott	1,650 0 0
V. Knowles	1,647 4 2
F. Beilby	1,633 0 0
F. Southern	1,589 12 6
Hebbleshite & Wilson	1,584 0 0
Morrel & Son	1,580 0 0
W. Stephenson	1,578 0 0
T. Grates	1,563 0 0
Vickerman	1,567 0 0
J. Wilson	1,562 0 0
J. Bilton	1,551 14 7
F. Bilton	1,533 0 0
F. Singleton	1,500 0 0
J. Taylor & Son	1,499 7 0
Blackburn & Son	1,496 0 0
J. R. Woods	1,434 0 0
T. J. Winduss,* 307, Hessele Road	1,434 0 0
* Accepted. [Rest of Hull.]	

Kettering.—For the erection of a pair of houses, Morley Street, for Miss M. Waterman. Messrs. Bird & Batley, architects, Gold Street Chambers, Kettering:—

W. Riddle	£629 10 0
S. Stanton	608 0 0
C. Andrew	586 0 0
A. Lewin & Son	579 0 0
Smith, Edmunds & Co.*	565 0 0
* Accepted.	

London.—For the erection of a school, Deansfield Road, Eltham, for the London School Board. Mr. T. J. Bailey, Board's architect:—

W. Johnson & Co., Ltd.	£24,862
J. Greenwood, Ltd.	23,441
J. Smith & Sons, Ltd.	23,196
Martin, Wells & Co., Ltd.	23,250
G. E. Wallis & Sons	22,862
Patman & Fotheringham, Ltd.	22,750
E. Lawrence & Sons	22,692
F. & H. F. Higgs	22,580
Treasure & Son	22,561
Lathey Brothers	22,475
Holliday & Greenwood, Ltd.	22,397
J. Garrett & Son	22,389
Perry & Co.	22,378
W. Downs	22,373
J. & C. Bowyer*	21,953

* Recommended for acceptance.

London, N.W.—For the erection of a school, New End, Hampstead, for the London School Board. Mr. T. J. Bailey, Board's architect:—

McCormick & Sons	£22,877
G. S. S. Williams & Son	22,745
L. H. & R. Roberts	21,892
Patman & Fotheringham, Ltd.	21,847
F. Gough & Co.	21,387
J. Simpson & Son	21,000
T. L. Green	20,766
Stimpson & Co.	20,750

Halstead, Essex.—For alterations and additions to the infirmary and boardroom at the workhouse, for the Halstead Board of Guardians. Messrs. Clare & Ross, architects and surveyors, 1, West Street, Finsbury Circus, E.C., and at Chelmsford and Westcliff-on-Sea. Quantities by the architects:—

	A.	B.	C.	Total.
W. J. Elsdon, Sible Hedingham	£4,076	£4,959	£825	£9,860
W. Hopkins, Birmingham	3,700	2,100	1,000	6,800
Coulson & Lofts, Cambridge	3,640	2,016	946	6,602
Cubitt & Gotts, Ipswich	3,300	2,240	885	6,425
Potter & Son, Chelmsford	3,196	2,185	1,070	6,451
Smith & Son, Witham	3,405	2,005	977	6,447
Parren & Son, Erith	3,474	2,014	916	6,404
J. McKay, Clacton-on-Sea	3,398	1,989	972	6,359
F. Johnson, Chelmsford	3,300	1,903	897	6,187
F. & E. Davey, Ltd., Southend	3,403	1,843	891	6,142
Scales & Robins, Cambridge	3,300	1,830	865	5,995
Redding & Son, Cambridge	3,328	1,816	830	5,974
H. J. Linsell, Newmarket	3,285	1,844	816	5,945
S. E. Moss & Co., Southend	3,197	1,836	876	5,909
A. R. Whurr, Southend	—	—	—	5,895
Everett & Son, Colchester	3,230	1,791	840	5,861
Ernest West, Chelmsford	2,893	1,976	875	5,744
A. Suckling & Co., Halstead	3,130	1,820	750	5,700
C. Roper, Ipswich	2,998	1,845	850	5,693
G. Sharp, Halstead	3,017	1,646	810	5,473
Mason & Son,* Haverhill	2,889	1,667	799	5,355

[Architects' estimate (total), £54,450.]

A for the two new wings to Infirmary. B for alterations to infirmary, boundary walls, &c. C for alterations and additions to boardroom, &c.]

C. Miskin & Sons	£20,576
C. Dearing & Sons	20,334
Treasure & Son	20,329
E. Lawrence & Sons*	19,703

* Recommended for acceptance.

London.—For the erection of a school, Magdalen Street, Horselydown, for the London School Board. Mr. T. J. Bailey, Board's architect:—

Martin, Wells & Co., Ltd.	£9,850
F. & H. F. Higgs	9,543
Rice & Son	9,442
W. Downs	9,442
T. L. Green	9,380
General Builders, Ltd.	9,269
Lathey Brothers	9,113
W. King & Son	9,027
Staines & Son	8,989
J. Marsland & Sons	8,978
J. Greenwood, Ltd.	8,855
Stimpson & Co.	8,772
J. Garrett & Son	8,663
T. D. Leng	8,601
E. Triggs	8,569
Spencer, Santo & Co., Ltd.	8,541
Edwards & Medway*	7,947
	7,400

* Recommended for acceptance.

London.—For the enlargement of boys' school, &c., at Montem Street School, Tollington Park, for the London School Board. Mr. T. J. Bailey, Board's architect:—

J. Grover & Son	£4,117
-----------------	--------

L. H. & R. Roberts	£3,914
G. S. S. Williams & Son	3,799
J. Willmott	3,673
F. & F. J. Wood	3,481
McCormick & Sons	3,442
Clarke & Bracey	3,403
C. Dearing & Son	3,370
Stevens Brothers	3,364
Perry & Co.	3,333
E. Lawrence & Sons	3,287
Treasure & Sons*	3,093

* Recommended for acceptance.

London.—For sanitary and drainage improvements at St. Paul's Road School, Bow Common, for the London School Board. Mr. T. J. Bailey, Board's architect:—

E. Lawrence & Sons	3,611	0	0
A. E. Symes	3,471	0	0
G. S. S. Williams & Son	3,466	0	0
J. Peattie	3,354	0	0
R. P. Beattie	3,323	0	0
J. Willmott & Sons	3,305	0	0
F. & F. J. Wood	3,277	11	6
Lathey Brothers	3,197	0	0
Stevens Brothers	3,156	0	0
F. Bull*	3,098	0	0
A. Porter	2,955	0	0

* Recommended for acceptance.

London.—For the erection of a laundry centre at Holmes Road School, Kentish Town, for the London School Board. Mr. T. J. Bailey, Board's architect:—

McCormick & Sons	£1,189
T. L. Green	1,176
General Builders, Ltd.	1,159
F. Newton	1,157
G. S. S. Williams & Son	1,128
Stevens Brothers	1,114
Marchant & Hirst	1,035
J. Willmott & Sons	1,074
Treasure & Son	1,035
E. Lawrence & Sons*	1,027

* Recommended for acceptance.

London.—For improvements at William Street School, Hammersmith Road, for the London School Board. Mr. T. J. Bailey, Board's architect:—

C. Wall, Ltd.	£5,415
G. Neal	5,404
C. F. Kearley	5,327
Rice & Son	5,250
J. Simpson & Son	5,094
Lathey Brothers	5,079
E. Triggs	5,041
Martin, Wells & Co., Ltd.	5,005
General Builders, Ltd.	4,989
J. Grover & Son	4,881
Treasure & Son	4,850
Stimpson & Co.	4,770
Leslie & Co., Ltd.	4,704
F. G. Minter*	4,437

* Recommended for acceptance.

(Continued on p. xviii.)

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By order,

HENRY WOODHOUSE,

Chorlton Union Offices, Clerk to the Joint Committee. All Saints, Manchester.

8th March, 1904.

CLERK WANTED for Contractor's Office, must be thoroughly experienced in Builder's book-keeping and accounts.—Apply with copies of recent testimonials, and giving salary required, to THOMAS GODWIN, Builder and Contractor, Hanley, Staffordshire.

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R. W. EDWARDS,
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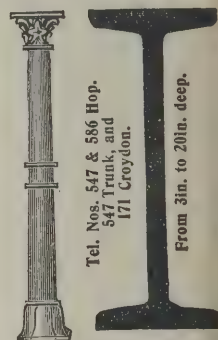
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THE
BUILDERS' JOURNAL
AND ARCHITECTURAL RECORD.

April 13, 1904. Vol. 19, No. 479.

6, Great New Street, Fetter Lane, E.C.

Summary.

Messrs. Henman & Cooper suggest a Y-shaped plan for hospital wards. After applying every test that extensive hospital experience could dictate they say it was surprising to find how many advantages, with no corresponding disadvantages, were gained by its adoption; "in fact, it has all the good points of a circular ward (provided the internal angles are well rounded off) without its acknowledged defects." (Page 181.)

The Dean of York has issued a further report on the restoration of the Minster, which is being undertaken under Mr. Bodley's direction. The work at the west front is progressing satisfactorily, though necessarily very slow, as the condition of the fabric has been found to be very faulty owing to the inefficient manner in which the repairs were executed at the beginning of the last century. It is hoped that part of the scaffolding may be removed by next autumn. (Page 175.)

The British, French, German and American schools at Athens have settled their programmes for another season's excavations. The British will resume their work in Eastern Crete and in Laconia; the French will do what is needed to complete their great excavations at Delphi and will also devote attention to Delos; the Germans will resume researches at Levkas (Homer's Ithaca), and the Americans will continue excavations at Corinth. Among the work to be undertaken by the Greek Archaeological Society will be repairs to the Erechtheum and the restoration of the Lion of Chæronea. (Page 176.)

In the very interesting church of S. Flaviano at Montefiascone (near Viterbo, in Italy) lies buried the Canon Johannes Fugger. He was on a journey to Rome and his secretary had to ride ahead and test the wines. When he found a good wine he wrote "Est" on the inn door. He found the wine of Montefiascone so much to his liking that he wrote "Est" three times and the Canon died there! (Page 172.)

Speaking at the annual general meeting of the Glasgow Institute of Architects last Wednesday, Mr. Horatio K. Bromhead (the president) said they could conclude there was at last a dawning idea at the headquarters of the Glasgow Royal Infirmary that a grievous mistake had been made in casting out the designs that were pronounced the best and in refusing to submit the inferior favoured one to public daylight. If he had not seen the front elevation of the chosen design it would have been his opinion that any new building might have a better appearance than the old one. But the proposed sky-scraper could only be considered a calamity to the most venerable specimen of architecture in Scotland, the cathedral. (Page 173.)

The Newer Strand. THE appearance of the Strand is undergoing vast changes, and though we must be thankful for the widening of the roadway in places we can hardly feel satisfied with some of the great new blocks of buildings that have just been, or are still being, erected. Close to Charing Cross station, but on the opposite side, there is the new bank for Messrs. Coutts, an academic solid-looking building of which Mr. Macvicar Anderson is the architect—not a building exhibiting anything very brilliant in conception or design, yet satisfactory enough in general. A little further east, on the opposite side, is the great front of the Hotel Cecil, recently completed from Mr. Joseph Sawyer's designs; it is a most inglorious affair, not worthy of the splendid site it occupies, and we must deeply regret that the work was not entrusted to a cleverer architect. Next to it, the huge new blocks of the Savoy Hotel are being rapidly completed. We cannot say we admire them as a whole. The detail appears to us to be too finicking, and the small domes that crown the corners do not fall happily together; the manner in which the chimneys are turned into them, and their ugly finials, only increase the ill effect they have. Perhaps the most satisfactory parts of the work are the inner block, the roofs with their chimneys, and some portions at the back that mass up well. The upper part of the inner block has an arcade treatment embellished with figures in the spandrels, and this has an exceedingly good effect. The chimneys are strongly treated with alternate bands of cream and green faience (which material is used for all the facades, together with white-glazed bricks), while the roofs of two of the blocks are covered with some very effective tiles—a sort of pantile—of a metallic green shade; these came from Spain and a Spaniard was here to see that they were properly fixed. Further along the Strand is the new Gaiety Theatre and Hotel. The former, which makes the corner of the block at the western end of Aldwych, is now almost finished. The addition of the glass awnings over the doorways has enhanced rather than detracted from the appearance of the building. The copper dome, very carefully executed, looks well, though till the fans below are removed one cannot altogether judge it. Still, the building is greatly improved and when the adjoining hotel is completed the block will doubtless be very imposing; though we shall always regret that the Council did

not carry out the scheme to build the "hotel de ville" on this island site—such an opportunity rarely occurs.

The Darlington Hotel Disaster. THE evidence given at the inquest in connection with the Darlington Hotel disaster in New York discloses some remarkable facts. It appears that the building was being erected by a company—the Allison Realty Co.—directed by men who knew nothing about practical construction, and that this was their first job. The secretary of the company was a lawyer and his brother (who was supposed to be director of operations) a sailor. The way they went to work is worthy of note. The secretary obtained a ground plan from a broker and took it to a firm of architects, who agreed to make the drawings for a twelve-storey apartment house, to cost about £70,000. Then, some structural ironwork firms having represented to him that there was too much steelwork shown, the secretary had a modified set of plans drawn up by an engineer, but the architects refused to pass these as they considered the building would be unsafe if erected according to them: the plans, in fact, were disapproved by the Building Department. The secretary then got an engineer to fit the two sets together somehow, and this third set was also disapproved by the Building Department. Nevertheless, the building was being erected according to them, and without the supervision of architect or engineer, with the result that after swaying 2ft. out of plumb at the ninth floor during a high wind, the whole thing eventually collapsed, killing the workmen engaged on it (and also a lady at lunch next door) and injuring many others. There is, of course, no other comment on such an affair than that of criminal negligence. This was the verdict of the jury, who also recommended (1) the passing of a law to prohibit the erection of buildings without the superintendence of the original architect or a competent builder of at least five years' experience; (2) the provision by the Building Department of a corps of competent engineers to inspect the erection of all buildings requiring engineering skill, and requiring approved plans of each building to be kept on the premises during construction; (3) that all architects, engineers and contractors engaged in the structural work of all buildings in New York be experienced in their several lines and be licensed by law.

MONTEFIASCONI AND BOLSENA.

By F. HAMILTON JACKSON, R.B.A.

THERE is a station called Montefiascone on the railway from Attigliano to Viterbo, about eleven miles to the north-west of the latter place, but this station is three miles away and it is a long drag uphill to the loftily situated town. The hill which it occupies is not far from the southern bank of the lake of Bolsena, and the view from it is most extensive, embracing a large part of ancient Etruria. Tombs which have been discovered in the neighbourhood make it evident that it was an Etruscan city; some regard it as the site of Volsinium, which others place at Bolsena and even at Orvieto; others as Falerii, and others as Fanum Voltumnæ, the shrine of the great Etruscan goddess, whither the sacerdotal rulers of the land were accustomed to resort in times of difficulty or danger. Latin inscriptions found on the site testify to its existence under the Romans, and it was frequently occupied by the troops of contending parties during the Middle Ages. The fortifications, of which a considerable part still remains, are mediæval and the streets are narrow and steep. Two popes of the ninth century were citizens of Montefiascone, Romano I. and Marino II., but the bishopric only dates from the time of Urban V., 1369. Otho IV. established his quarters here, and Frederick II. and Nicolo Piccinino also occupied the town. It became afterwards for a time a free com-

mune ruled by a council of nine citizens. The castle was frequently a papal residence; among other popes Urban V. made use of it during his three years' stay in Italy. Paul III. conceived the project of making it the capital of the Farnese duchy, but was not able to make himself master of it.

In 1657 a severe pestilence afflicted the town, and in 1695 an earthquake threw down or damaged many buildings. Of those remaining, the cathedral of S. Margherita was designed by Sammichele. It is still incomplete, though the octagonal dome which is such a conspicuous object in distant views of the place was added by C. Fontana from Sammichele's designs. The façade has two towers. The Palazzo Comunale was erected by two lords of the place belonging to the tribe of Stellatina, the seminary was founded by Cardinal Paluzzio Altieri, and the college by Marc Antonio Barberigo, Venetian patrician. They are all of the usual late Renaissance type.

The most interesting building, however, is the church of S. Flaviano, a little outside the walls on the slope of the hill. It was built in 1032 and restored by Urban IV. in 1262. Standing on a steep declivity, it has two storeys with a square well connecting them. The upper one is entered by a door on the level of its floor, while the lower stands some distance above the road at the foot of the hill and is entered in the usual manner by the west door. The lower church consists of a nave of two bays and the well mentioned above, the sides of which have large, rather low, semi-circular arches across the nave, and towards the apse and at the sides a central

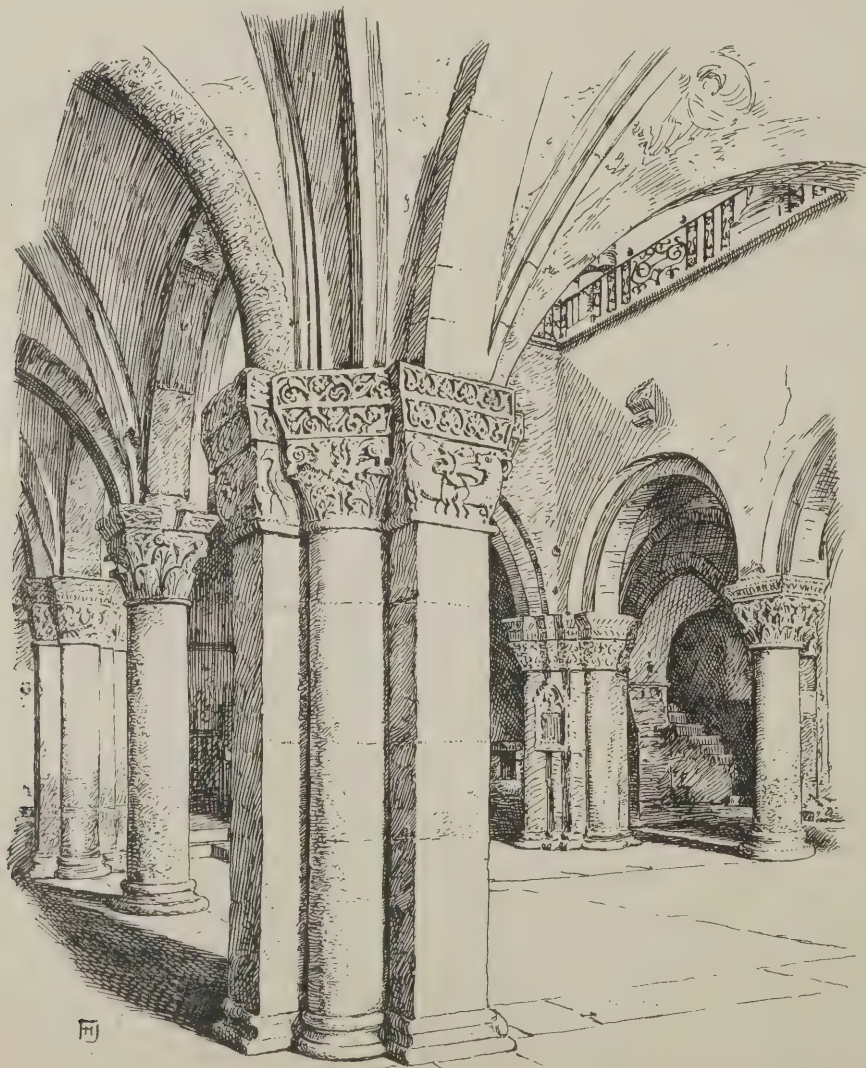
pier and two smaller semi-circular arches. On the vaulting there are remains of painting in places, and the walls have dilapidated frescoes of the fourteenth century. The floor is tiled, with strips of stone inserted, and there is an altar at the eastern end within an apse, the walls of which are green with damp. At each side of it a staircase leads to the upper church, which has an arcade of four equal arches and a large one in the western bay which is as large as the two which are below it in the lower church. Next to this is a small arch which has been rebuilt and is much deformed. The altar is at the edge of the well, so that the celebrant must have faced the congregation in the ancient manner, and behind it against the wall is a bishop's throne with a canopy roughly cut in a grey stone. The façade is very picturesque, having three unequal pointed arches, the central one being recessed and shafted on each side of the door. Above is a loggia of the period of the Renaissance, at which time the belfry was added. In the fourteenth century the church was made some 20 ft. longer and re-vaulted, the upper part being then rebuilt. Rivoira says that the upper part was used as a *matroneum*, and that the custom of the separation of the sexes lasted in the neighbourhood of Viterbo till the Renaissance, though abandoned after the sixth century throughout the greater part of Italy. He also says that the vaults of the older part of the church are the earliest with ribs known to him, and that the upper church was built to counteract their thrust by weighting the pillars.

All the carving is very rough and grotesque, as might be expected from its early date. It is in this church that Canon Johannes Fugger lies buried, who delayed completing his journey to Rome so long owing to the charms of the wine of Montefiascone that he never got there. His epitaph (very well known) was written by his secretary, Johannes Oporinus, and runs thus:—

"Est, Est, Est. Propter nimium est Johannes de Fuc. D. Meus mortuus est." He was to ride before his master and test the wines. When he found a good wine he was to write "Est" on the inn door. He found the wine of Montefiascone so much to his liking that he wrote "Est" three times. The best muscatel of the district is still known as "Est," and others find it as much to their liking as Oporinus did.

The road to Bolsena runs in sight of the lake for nearly the whole distance, through oak woods and by vineyards and fields which show that the district is a fertile one. The lake is pretty with its islands, the grouping of which changes in a very attractive manner as one proceeds, but the hills which surround it lack character. It is the crater of an extinct volcano, about twenty-eight miles round, and is very deep near the islands, of which there are two. On one of them, Martana, Amalasuntha, queen of the Goths, daughter of Theodoric, was imprisoned 534 A.D. and afterwards strangled while bathing, by order of her cousin Theodatus, whom she had raised to the rank of co-regent. The lake abounds in fish and wild fowl, but the banks are deserted, especially on the west side, owing to the malaria.

The small town is rather dirty but has picturesque corners. It lies partly on the flat land near the lake, but climbs a hill which is crowned by a mediæval castle now in a ruinous state. The walls of the houses show inscriptions, cippi and other memorials of the Roman municipium of Volsinium Novum, the site of which is reached in a few minutes by an antique causeway of basalt outside the Florentine gate. An amphitheatre among the ruins is now a vegetable garden. The Germans hold that Orvieto was the site of the ancient Volsinium, but Dennis and the Italians place it above Bolsena, on the plateau now called Il Piazzano, where the soil is strewn with broken pottery, and in the



INTERIOR OF S. FLAVIANO, MONTEFIASCONI. DRAWN BY F. HAMILTON JACKSON, R.B.A.

cliffs below which are a few tombs now occupied as dwellings. All about the country remains of baths, temples, mausoleums, sarcophagi, &c., are scattered. It is believed by some that the temple of the goddess Norzia was here, in which a nail was driven every year by which to compute the date. Most of the tombs discovered had been rifled previously. The finest yet found was about three miles to the north of Bolsena, not far from Barano. From this tomb the two pairs of earrings with winged victories as pendants, now in the British Museum, were taken. The road to Orvieto shows sections of earth with Roman masonry and *opus incertum*, with a layer of broken pottery above it, 8ft. or roft. below the present surface.

Volsinium is first mentioned in B.C. 392, after the fall of Veii, when it took the occasion of the weakening of Rome by famine

exile or treating them as slaves, even forbidding them to meet at banquets in any number and forcing them to make such wills as they chose. Nor did they stop here, but contracted marriages with the first families! It is difficult to understand how such a state of things could have arisen unless they had been the mainstay of the army in the contest with Rome and had therefore been made citizens. The Roman army soon altered the situation. Sejanus, the favourite of Tiberius, was a native of Volsinium Novum. In the Middle Ages it was the prey of the factions of the prefects of Vico of Viterbo on one side and the Monaldeschi of Orvieto on the other. In 1468 the latter were driven out and Bolsena came under the dominion of the Church.

The "collegiata," S. Cristina, was a cathedral from the third to the seventh century,

sweet as to the head but rough in other parts. Her body has been smuggled away to Palermo. The altar of the miracle is surrounded by a high seventeenth-century balustrading, and they say that there are stains of blood on it and on the floor, but these are covered up. The sacristan is an enthusiast and has spent a considerable time in scraping off the whitewash in the sacristy and other parts of the church and discovering wall-paintings of the fourteenth and fifteenth centuries. His zeal far outruns his discretion when it comes to divining their authors. Some column shafts of red and grey granite and an oval marble sarcophagus with reliefs of the triumph of Bacchus which used to be in front of S. Cristina have been removed to form part of the collections in the Communal Museum.

(To be continued.)



FACADE OF S. FLAVIANO, MONTEFIASCONC. DRAWN BY F. HAMILTON JACKSON, R.B.A.

and pestilence to make hostile incursions, in conjunction with Salpinum, a neighbouring town. Livy says it was not a hard task to defeat them, and 8,000 men laid down their arms and purchased peace for twenty years on humiliating terms. In the Etruscan wars of B.C. 311 and 294 B.C. it took part. In the latter its territory was laid waste and the army routed, leaving 2,800 dead, by the Consul L. Postumius Megellus. This resulted in the payment of a heavy indemnity whereby Volsinium with Perugia and Arretium obtained forty years' truce. Not having gained wisdom by this bitter experience, they took up arms again only 14 years later, in company with the Vulcientes, and were then finally subdued. Pliny says that Fulvius Flaccus took more than 2,000 statues from the city in 265 B.C. This was after the time of the story told by Valerius Maximus to the effect that they called in the Romans to help them to take again the power which they had given to their slaves. These rode roughshod over their masters, driving them into

when its bishopric was united to that of Orvieto. In the eleventh century the present church was built, and in 1503 Cardinal Giovanni Medici, afterwards Leo X., added a fine Renaissance façade. Above the doors are reliefs by Andrea della Robbia. In the left aisle is a doorway of the eleventh century. Between this church and the grotto, where the miracle of the mass of Bolsena took place in 1263, the space was covered in in 1695, when the whole interior was much altered. By the entrance to the catacombs, in the chapel of S. Cristina, is a fine altar-piece of the school of the della Robbias, and on the other side, by the altar of the miracle which stands beneath a ciborium of the eighth century, is a little "confession" made about twenty-five years ago within which is the sarcophagus in which S. Cristina was buried after being drowned in 278 A.D., above which is a terracotta statue of her with the stone tied to her side which sank her in the lake, ascribed to one of the della Robbias, very delicate and

GLASGOW INSTITUTE OF ARCHITECTS.

The Royal Infirmary Design.

THE annual general meeting of this institute was held on Wednesday last, Mr. Horatio K. Bromhead, F.R.I.B.A., president, in the chair. The secretary read the thirty-sixth annual report, which stated that during the past session Sir James Guthrie, president of the Royal Scottish Academy, had been added to the roll of honorary members. The number of ordinary members on the roll is now seventy-three.

The president, in moving the adoption of the report, said that one of the most important improvements for the profession to which he looked forward was the openness and publicity of competition. They were indebted to the Corporation of Glasgow, which had been most successful in obtaining, by competitions, a number of good designs for public libraries. This was a great



THE PORTA FIORENTINA AND CASTLE, BOLSENA. DRAWN BY F. HAMILTON JACKSON, R.B.A.

contrast to the Royal Infirmary competition. On a recent occasion the Lord Provost said that the design which the governors were proposing to adopt had been submitted to their officials, who had indicated some details which it was thought required improvement. They could therefore conclude that there might at last be a dawning idea at headquarters that a grievous mistake had been made in casting out the designs that were pronounced the best and in refusing to submit the inferior favoured one to public daylight. If he had not seen the front elevation of the chosen design it would have been his opinion that any new building might have a better appearance than the old one. But the proposed sky-scraper could only be considered a calamity to the most venerable specimen of architecture in Scotland, the cathedral. If it were for the public good, feelings might be stifled, but when it was known that the most modern and perfect ideas were dead against it, when one saw that the most remarkable modern hospital (Belfast) was only one storey high, and the intended new building at Birmingham was to be only two storeys high, one could not help seeing the ill-advisedness of spending a large sum of money after the manner of a bygone generation. However, the Institute might have a little comfort in the hope that their action had produced a limited modification of the defects. Looking ahead, there appeared to be a little cloud arising on their horizon in the unfortunate tendency to divide the profession into two parties. On the one hand there were architects who seemed to want to make out that art was everything, and who struggled to get elected into some art atmosphere which they possibly imagined was superior to architecture, where they could ignore business capacity and practical knowledge by employing skilled specialists to do the real work for them. On the other hand they saw men who were content to make their work practical and businesslike, whose skill enabled them to use materials in a sensible and economical manner, but with little thought of suppressing what was ugly. From this point of view the recent agreement between the School of Art and the Technical College to confine the art teaching of architecture to the School of Art and the constructive and scientific branches of architecture to the Technical

College was quite a disaster. The antidote was, however, in the air in the shape of a statutory registration of architects, which had become the question of to-day. He hoped this would lead both sides to see that the happy medium was a combination of both ideas.

The following elections were made for the ensuing year:—President, Mr. John Keppie, F.R.I.B.A.; vice-president, Mr. James M. Monro; council, Messrs. David Barclay, A. N. Paterson, John Keppie, Horatio K. Bromhead, James Lindsay, T. L. Watson, James M. Monro, Alexander M'Gibbon, Andrew Balfour, W. J. Boston, Charles Gourlay, J. A. Campbell, Thomas Baird, junr., R. D. Sandilands, James K. Hunter and J. M. Crawford.

SEWAGE DISPOSAL.

At a meeting of the Society of Engineers held on Monday evening a paper was read on "The latest practice in Sewage Disposal" by Mr. H. C. H. Shenton. The author first pointed out that the practical engineering side of the question as distinguished from the theoretical side had not received the attention it deserved in papers read on the subject. He then briefly reviewed the present methods of sewage-disposal, observing that the biological methods included every recognized system of final sewage purification.

Some of the details of construction of septic tanks, contact beds and continuously aerating filters were then described. The absolute importance of proper construction in order to give theoretical principles fair-play was insisted upon. Failures were often due either to bad design or construction, or to careless working, and not to any mistake in principle. The contact bed and the continuous filter were compared, their depths were discussed, and also their practical advantages and disadvantages. Methods for overcoming the latter were suggested, which were briefly to keep the outlet of the septic tank at a sufficiently low level; to intercept sludge which by any irregular working passes out of the septic tank; to allow *humus* to wash out of first-contact beds and to intercept it on the surface at the second beds; and to catch the *humus* washed out of the continuously aerating filters in pools, channels or on fine filters.

THE BRITISH PAVILION AT ST. LOUIS.

THE British Pavilion at the St. Louis Exhibition is a reproduction and adaptation of Wren's Orangery at Kensington Palace. It has been erected from designs made by Mr. Ernest George, and the work of erection has been carried through by the well-known London contractors, Messrs. George Trollope & Sons. It is understood that the cost has been something over £20,000. As usual in all exhibitions, the British Commissioners have not been content to put up a temporary building in plaster or, as it is known technically, staff, but have made it as solid as if it were to stand the test of time. The finishings and furnishings of the interior of the building are in keeping with the character of the apartments represented. The banqueting-hall is finely panelled, and the plaster ceiling is enriched with the royal arms and festooned mouldings of fruit and flowers, the work of the contractors. The furniture of this room, by the same firm, comprises reproductions of historical examples of the Queen Anne period. The old console tables formed part of the collection at Merstham House (Lord Hylton). The chairs are reproduced from the originals in the possession of the Earl of Westmorland and others. The brass chandeliers are patterned upon fine old examples. Next to the banqueting-hall is a suite of rooms designed in old English styles.

The Elizabethan Room has an ornamental ceiling copied from the breakfast-room of Holland House. The chimney-piece paneling and plaster frieze are taken from well-known examples, such as Bromley Palace, Knole Park, Crewe Hall and others. The furniture belongs to the same period, the small cabinet being a copy of one dated 1621, formerly belonging to Archbishop Sharp. The two large cabinets are also examples of the period. In the centre is a copy of an old Elizabethan table. The armchair and settee are adapted from models in the famous collection of Elizabethan furniture of Knole Park, Kent, the seat of Lord Sackville, while the high-backed arm-chair and stool are exact reproductions from the same collection, from which are also drawn the designs for the chandeliers. The armour was formerly in the collection of the late Earl of Egmont

at Cowdray, who also possessed the originals of the four chairs covered in old embroidery.

The Georgian Room, with white carved panelling and mahogany doors, is a fine specimen of English work of the period, reproduced from an old house at Epsom. The furniture consists of beautiful examples with a few reproductions of old pieces. The wall lights are copies of old ones. The Adam Room, with its enriched plaster ceiling, frieze and doorways, is taken from examples designed by Robert and James Adam in the latter part of the eighteenth century. The furniture in this room is in the manner of Sheraton, and comprises many actual examples of the period. The Large Room (Queen Anne) is designed in the style of Sir Christopher Wren, the details being taken from Hampton Court Palace and Belton House, where Grinling Gibbons executed some of his best wood-carving under Sir Christopher's direction. Its furniture is from old examples, some of which were in the possession of Messrs. Trollope.

When the exhibition opens the pavilion will be further decorated with paintings, as at the last Paris Exhibition, when this work was carried out with great success under Mr. Isidore Spielmann, now, as then, secretary of the Fine Art Committee, under the chairmanship of Sir Edward Poynter. Most of the staff of the Commission have already proceeded to St. Louis, where, so far at least as the British exhibit is concerned, everything will be in good time for the opening day, April 30th.

Bricks and Mortar.

Aphorism for the Week.

Gothic construction is not, like antique construction, immutable, absolute in its means. . . . These builders are no longer monks submissive to rule or tradition; they are laymen who analyze everything, and recognize no other law than that of reason.—VIOLETTE-LE-DUC.

Our Plates.

BOURNVILLE, outside Birmingham, is the well-known village erected by Messrs. Cadbury for their employees. It is a very delightful place, and Mr. Harvey is to be congratulated on the clever and effective way in which he has designed the houses, several of which we now illustrate. Full particulars of them will be found in the paper which Mr. Harvey read before the Architectural Association. A full report of it appears in our issue for February 10th last.—The Knickerbocker Trust Co. Building in New York is another fine classical design by Messrs. McKim, Mead & White. The detail we publish will doubtless be studied with much interest, especially in conjunction with the photograph of the building reproduced on page 182 of this issue.

Northern Architectural Association. In the forty-fifth annual report of the Northern Architectural Association a copy is given of the letter sent to the R.I.B.A. in reference to the question of borough surveyors carrying out architectural work, particular mention being made of the fact that the property surveyor of Newcastle (who was appointed to look after the properties of the city) has prepared plans for additions to the fever hospital, to cost about £50,000. The Association communicated with some of the allied societies about the matter, and ascertained that in York, Bristol, Cardiff and elsewhere borough surveyors were undertaking architectural work; that in Leeds the practice is decreasing, and that in Leicester the council now put into the hands of architects all works costing more than £500. The R.I.B.A. replied that in their opinion "it is extremely undesirable that large public works of an architectural character should be put into the hands of county, city

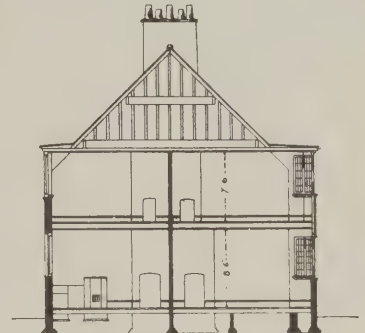
or borough engineers or surveyors." The Institute has formed a large committee, including all the presidents of the allied societies, to go thoroughly into the question. The report also gives in full the trust deed relating to Mr. Glover's munificent gift to the Association. We note that in connection with the "Glover travelling studentship" the council offer £5 towards the expenses of a student who will spend at least a fortnight in England or ten days abroad, and will submit three perspectives and three sheets of measured drawings done during that time. This seems rather a miserable sum to offer. An effort should at least be made to increase it to £10. The accounts show cash in hand £49 4s. 10d. and £50 invested.

The Destruction of Old Westminster. We quote the following from the "Pall Mall Gazette":—"We are delighted to learn that the protest that we raised on February 20th against the shameless vandalism which is daily being permitted by the Ecclesiastical Commissioners in the neighbourhood of

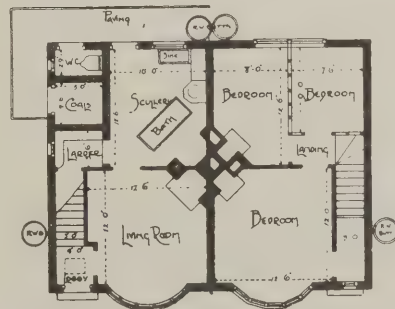
"Free Lance" Criticism. THE "Free Lance" has been making some silly remarks about the architecture of St. Paul's School for Girls at Brook Green, Hammersmith (of which Mr. Gerald C. Horsley is the architect). "The general effect," says our contemporary, "is ostentatious rather than imposing, and the top-heavy appearance given to the building by the upper storey of stone resting principally on a support of brick is distinctly unpleasant. No doubt brick is as strong as (and, in London at any rate, more lasting than) stone, but the eye cannot be persuaded of the fact. Surely, no matter what the style of architecture may be, the eye should be satisfied that the base can support the superstructure. Presumably architecture as an art is in a bad way, or we should not see a massively-constructed building like the new Gaiety decorated with artful stone imitations of paper flowers. The taste for tawdry decoration is growing positively vicious. We believe there are architects who would put stone rosettes on the Tower of London."



FRONT ELEVATION.



SECTION.



GROUND-FLOOR PLAN.



BACK ELEVATION.

A PAIR OF HOUSES AT BOURNVILLE. W. ALEX. HARVEY, ARCHITECT.

Westminster Abbey has already borne fruit. It appears that in connection with the recent County Council election the following question was put to various candidates, reference being made in addition to our own remarks, as well as those in THE ARCHITECTURAL REVIEW, THE BUILDERS' JOURNAL, the "Cornhill Magazine" and elsewhere:—"Besides the important question of the fair working of the Education Acts, you are asked to pledge yourself to use your powers, if elected, to resist the further demolition of the historic and picturesque houses in the region just behind Westminster Abbey, comprising Great College Street, Barton Street, Cowley Street, North Street, and to add your name to the influential ones already appended to the protest against it, which is supported by all patriotic and cultured citizens, irrespective of party." After attention has been called to the subject, and remembering further the presence of Sir William Richmond on the Council, we trust that it is not altogether in vain to hope for the rescue of that which still survives the hand of the spoiler."

Restoration of York Minster.

THE Dean of York has issued a further report on the restoration of York Minster. The external repair and restoration of the east end of the Lady Chapel was completed in 1899. During the past year an important step has been taken to beautify the interior by placing upon the brackets attached to the pillars statues of the founders of this portion of the Minster. It is further proposed to restore the elaborate canopy of the tomb of Archbishop Bowet, which was grievously damaged in the fire of 1829, and Mr. Bodley has prepared designs for groups of figures to be placed in the niches of the reredos (the centre one consisting of the Holy Family, and on either side the Shepherds and the Magi coming to the Manger at Bethlehem) as a memorial to Queen Victoria. Sufficient funds are in hand to place the first, and it is hoped that subscriptions may be received to enable the others to be speedily added. The work at the west front of the Minster is progressing satisfactorily, though necessarily very slow, as the condition of the fabric has been found to be very faulty



CORNER COTTAGE, ELM ROAD, BOURNVILLE.

owing to the inefficient manner in which the repairs were executed at the beginning of the last century. It is hoped that some portion at least of the scaffolding may be removed by the autumn of the current year, and that it will then be possible to see what repairs are needed in the belfry, where the bell-frames are very defective and require immediate attention—if possible the substitution of iron bell-frames for the present old and decayed frames of wood. The protection of the valuable painted glass in the windows of the Chapter House is also in progress. The stonework of two of the windows, which was in a very dilapidated condition, has been restored and filled with lattice panes of clear white glass, which will preserve the old glass from the action of the wind. The cost of this work has been about £100 for each window. Mr. Bodley has been instructed to prepare plans for a pulpit in the nave.

This Season's Excavations in Greece.

WITH the return of spring, says the Athens correspondent of the "Times," the various scientific institutions will renew the campaign of archaeological research. The British School, which possesses eight working members this year, will resume the excavations at Palæocastro, in Eastern Crete. They will be supervised, as last year, by Mr. R. C. Bosanquet, the director of the school, by Mr. Dawkins and by Mr. C. T. Currelly, who is now excavating with Professor Petrie in Egypt; while the architectural features will be studied by Mr. Heaton Comyn, A.R.I.B.A. The school will also undertake trial excavations in Laconia. As regards the French School, although their great excavations at Delphi have practically been completed, some time will still be occupied by the reconstruction of monuments, the identification of scattered fragments, &c., and other work. The municipality of Athens has offered to provide funds for the restoration of the treasury of the Athenians. Much care has been devoted to the preparation of the elaborate work, "Les Fouilles de Delphes," which is now being issued. The French School will also be engaged in further excavations of a more complete and systematic character at Delos, for which funds have been supplied by the Duc de Loubat. The excavation of the temple of Apollo Ptôos, north-east of Thebes, will be continued. M. Homolle, who has been appointed Director

of National Museums at the Louvre, will be succeeded in the directorship of the French School by M. Maurice Holleau, Professor of Greek and Latin Antiquities at the University of Lyons. Professor Dörpfeld, of the German Institute, will resume his researches in the island of Levkas, which he identifies with the Ithaca of Homer. The American School, under the direction of Mr. T. W. Heermance, will continue its excavations at Corinth. The Greek Archaeological Society intends to continue the excavations at the temple of Hera in Samos which were begun in 1902, and a series of excavations will be carried out in the neighbourhood of the "Theseum" at Athens which may fix the boundaries of the Agora in this direction. The Society has undertaken repairs of the Erechtheum and the temple of Apollo at Phigaleia and the restoration of the Lion of Chæroneia (described in THE BUILDERS' JOURNAL last week).

Experiments on Domestic Hot-Water Systems.

MR. A. SAYERS recently delivered a lecture on this subject at the Belfast Municipal Technical Institute. He said it was to be feared that many engaged in the business did not give the scientific and economic side the attention that was to be expected, and to this oversight or lack of knowledge might be attributed many unsuccessful heating jobs. This was an age of initiation, and the plumber, in common with other mortals, was satisfied to follow in the footsteps of others. Quite a number they met with when carrying out a heating job had to depend to a great extent, if not wholly, on producing a *facsimile* of a system he or some other plumber had fitted up which gave certain results. But the principle which underlay the system on which the success of the work depended was entirely left out of the

question, and the fact that some of the hot-water systems gave any results at all was to be attributed to the fire used being far in excess of the requirements. One was constantly coming across cases of hot-water supply and heating which were in no way suited to the requirements. Such methods were adopted because they gave satisfactory results elsewhere, but the altered circumstances had been overlooked. The size, make or heating capacity of the boiler was often not questioned. A certain boiler was supplied with a certain range; the journeyman plumber's business was to connect it. He was not paid for questioning whether that particular boiler was best suited to the requirements or whether the boiler would give the maximum consumption of coal. Proceeding, Mr. Sayers gave the result of experiments carried out by members of the trade class connected with the Institute. After reviewing the results of all the experiments conducted during the session, he said it would appear from them that gas might be more extensively used for hot-water heating purposes. Boilers, not necessarily gas boilers, but kitchen boilers, required remodelling. The boot boiler could be superseded with advantage by one presenting greater resistance to the flame and having a greater exposed heating-surface. The matter of taking branches was very important, and the plumber required to be always on his guard when making connections for draw-offs. It was not so much the heating of the water in a system as being able to draw it off unmixed that presented the difficulty. This point had been very forcibly illustrated throughout the experiments. When dips could not be avoided they should be employed with caution. From the results of the experiments on the cylinder and tank system it would appear that the plumber should be very sure of his ground before adopting the combined system, especially as some of the systems experimented with were recommended by authorities on the subject. As evidenced by results of radiator experiments, heating below the level of the boiler was quite possible, and when the plumber was possessed of sound practical judgment dipping the return pipe and heating below the level of the boiler need present no difficulty.



COTTAGE, MARY VALE ROAD, BLURNVILLE. W. ALEX. HARVEY, ARCHITECT.

Correspondence.

Malvern Competition.

To the Editor of THE BUILDERS' JOURNAL.

SIR,—We were rather pleased to see your remarks with reference to the above competition, and on receiving the particulars we roughly cubed up the requirements set forth therein (without allowing any "waste" for corridors, hall, lavatories, &c.), and taking the result at 6d. per cub. ft.—an impossible price—the amount provided was still found to be inadequate. We pointed this out to the borough surveyor, and asked for a reconsideration of the amount, but received no reply to our letter. It is therefore manifestly unjust to increase the amount at the last moment; it is only an echo of the Torquay competition, and we are surprised at well-known architects such as Messrs. Hare and Lanchester associating themselves with proceedings of this nature. Surely they, if any one, have had to suffer and work against the vagaries of borough councils and assessors in their earlier days. Is not Mr. Lanchester a member of the Competition Reform Society?—Yours truly,

DO UNTO OTHERS, &c.

"Landscape Architecture."

To the Editor of THE BUILDERS' JOURNAL.

BROUGHTON-IN-FURNESS.

SIR,—With reference to the recent remarks in your "Enquiries" column under the above heading, may I suggest that the question as to whether architects should lay out the gardens surrounding their work is much on a par with the question as to whether municipal engineers should undertake architectural work in connection with public and municipal undertakings. It is strongly, and I believe rightly, contended that the training

of a borough engineer is not such as to qualify him for design of a purely architectural nature, as opposed to constructional works, and I think there can be no doubt that, unless in very exceptional circumstances, the architect who tries to do the work of the landscape gardener is also undertaking work which is outside his province. Each profession is certainly the complement of the other, but each requires a distinctly separate training; and I fear that if the architect essays to make himself a proficient landscape gardener as well, it can only be by neglecting some branch of his more immediate work. We have at the present day far too few properly qualified professional landscape gardeners who have received a thorough training for their work, and far too many persons who consider that the profession may be lightly taken up as a side issue of some other business or profession and without any special serious preparation. So long as this feeling prevails we can never hope to raise garden design from the low estate to which it has undoubtedly fallen in this country, or raise our public and private gardens from that hopeless state of mediocrity and meaningless decentralization which the design of most of them presents.—Yours truly,

JAMES CROSSLAND.

HOYLE'S WAREHOUSE, MANCHESTER.

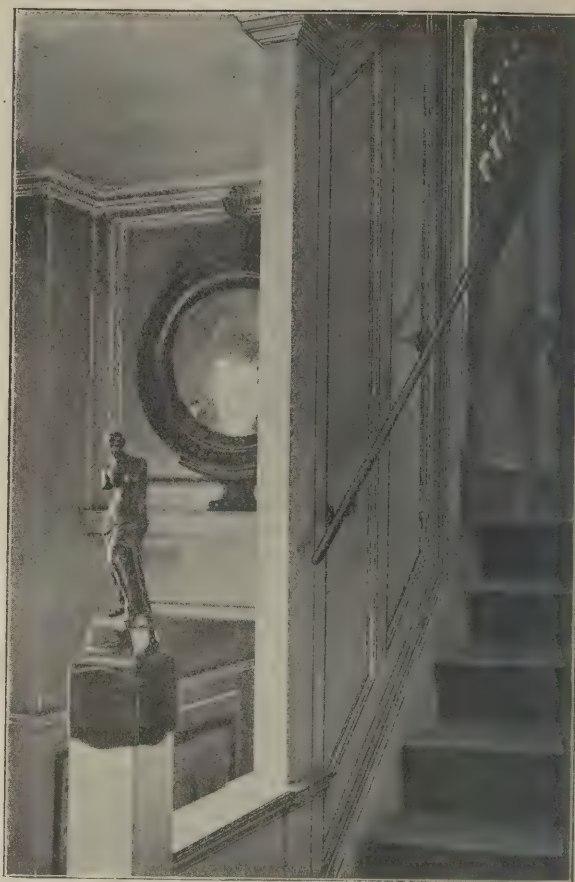
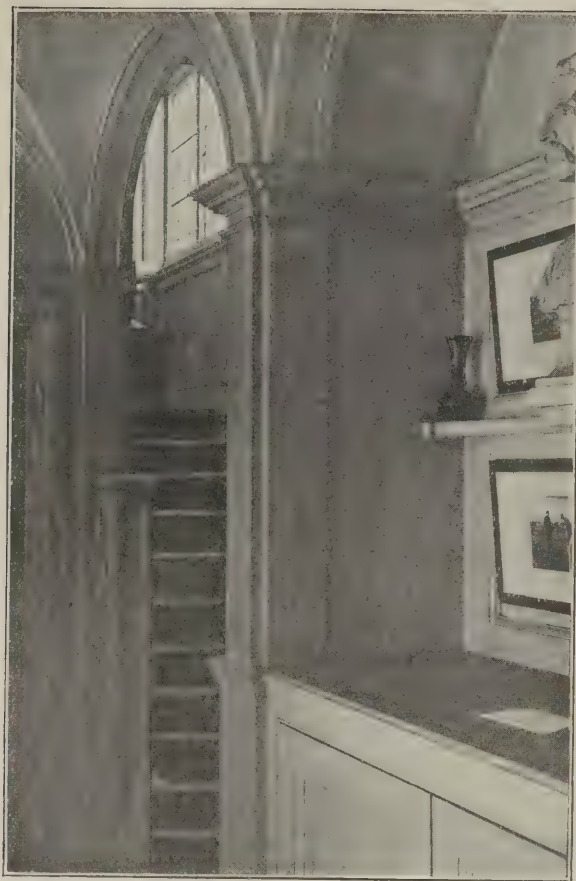
CONTINUING our weekly series of photographs showing the construction of this building, we now give a view taken on March 19th. It will be seen how the steel-work is advancing as compared with the view taken on March 12th, published in our issue for last week.

Law Cases.

Notices in regard to Drainage Work.—The case of *Ashbridge v. Evans* was recently heard in the Marylebone Police Court, under the London Building Act, 1894. In this case Mr. Arthur Ashbridge, F.R.I.B.A., district surveyor for St. Marylebone, summoned Mr. Evans for having done certain work in, to or upon a building, consisting of digging trenches under and in close proximity to the walls of a house in Queen Street, Edgware Road, for the purpose of re-draining, without first giving him notice under the above Act. Mr. Andrews, from the solicitor's department of the London County Council, by direction of the Council, appeared in support of the summons, and having called the attention of the magistrate, Mr. Curtis Bennett, to certain sections of the Act, explained that the trenches in question had been dug under the rear wall of the house, through the centre of the building under the basement floor and along the side front, the latter trench being in an area and coming within a few inches of the side front and causing the house to at once commence to collapse, no proper shoring having been erected before the commencement of the work. He further explained that it became necessary for the building to be dealt with promptly as a dangerous structure case, and that at the request of the district surveyor the house was immediately shored up by the Works Department of the London County Council, and afterwards almost entirely demolished under an order obtained before Mr. Plowden. Thus by prompt action what might have been a very serious accident, possibly attended by loss of life, was averted. The defendant having admitted the facts of the case, and having explained that he did not know that he was required to give notice, the magistrate inflicted the maximum penalty of 40s., with 2s. costs.



THE BUILDING OF HOYLE'S WAREHOUSE, MANCHESTER (Photograph taken on March 19th). CHARLES HEATHCOTE AND SONS ARCHITECTS.



STAIRCASE AT 52A, BERKELEY SQUARE, LONDON, W. MERVYN, MACARTNEY, ARCHITECT.

ANCIENT GLASS.

By J. KENNEL.

WE are informed by no less a scientific contemporary than "La Vie Scientifique" that for centuries but little progress has been made in the glass trade in the perfection of its products. Work is certainly executed in less time, and is not so dangerous as formerly; but modern products do not excel in beauty those which are preserved in certain museums. M. Appert, a French master glass-maker, artist and archæologist, has pursued some very patient research for reconstituting processes employed in the manufacture of church windows which are to-day unknown. According to him, the difference between present-day products and those which formerly existed consists in the impurity of the raw materials; they produce two bodies whose presence is now ignored—alumina and oxide of iron.

The silicious sands are almost always contaminated by these two elements, disseminated irregularly in banks, so that the glass presents the same variations in composition as quarry sand.

In an aluminosilicate, the alumina can be substituted chemically for silica; for two glasses of different composition a similar acidity will follow, or, in other words, there is an equal ratio between the oxygen of the acids and that of the bases. Such is the case with the two following mixtures (whose acidity is about 4.75 per cent.):—

	16th-century glass Per cent.	Present-day window-glass Per cent.
SiO ₂ - - -	56.25	72.5
Al ₂ O ₃ - - -	8.15	1.0
CaO - - -	14.35	13.0
FeO and MnO - -	3.00	0.4
K ₂ O - - -	17.30	—
Na ₂ O - - -	—	13

As a direct result, alumina has less fluidity, rapid setting following a highly-reduced

vitreous condition; moreover, the work of aluminous glasses is full of blemishes, there being also irregularities as to thickness and colour. On the other hand, resistance to mechanical effort and to the different agents—air, damp or acids—is at least equal to that of our best glasses. The method of attack by means of distilled boiling water (mentioned by M. Henrivaux) does not indicate so great an alteration upon compositions of the fifteenth century as upon those of our modern glass industry.

The alkalis are represented in these glasses by the potash, introduced in the form of vegetable ashes, formerly "fritted" with the sand before fusion in the vessel. Natural sodas, or "natron," of Egyptian origin, gave products that were more fusible and not so expensive, though their employment for church window-glass was not very common.

The colouring oxides found in ancient glassware are those of manganese, cobalt, iron and copper. Bioxide of manganese or "magnesia" destroyed the dirty yellow tint due to the iron contained in the sands or the impure limestone. With a higher proportion the tint assumed was dark violet, though always yellowish, as a result of the iron; oxide of cobalt has also sometimes been added to the manganese, their admixture giving bright blue violet. Cobalt alone produced coloured glass; a small proportion of manganese or oxide of copper gave variations of tint from violet-blue to greenish blue.

The coloration of glasses has been attributed by various authors to pounded artificial stones; this, however, is not correct, for the lapis lazulis are aluminosodo-calcic silicates, tinted by sodic sulphur, and the lazulites of Hungary are aluminous phosphates, consequently not having in themselves any colouring principle.

The yellow is obtained by the oxide of iron being made purer by traces of manganese. Copper oxide mixed with oxide of iron produced green of varying shades

according to the mutual proportions; these glasses were always made in an oxidizing flame, so as to preserve the copper in its highest state of oxidation.

Finely-divided metallic copper is an opaque red, and is only used as a veneer over colourless glass. Metallic iron was most commonly used as a reducer, as its effect was more certain than charcoal or sulphur. As to golden glass—which at the time of the French Revolution caused the destruction of numerous church windows—this is a myth, for none contained gold and none presented the characteristic ruby colour.

The reproduction of these kinds of glass is to-day very difficult by reason of the complex elements which they contain and the rustic processes employed in their manufacture.

52A BERKELEY SQUARE, LONDON.

IN our issue of March 23rd we published some views of a cottage at Silchester designed and occupied by Mr. Mervyn Macartney. We now give some views of No. 52A, Berkeley Square, London, W., designed by the same architect about fifteen years ago. Great difficulty was experienced owing to ancient lights. The plan is rather an unusual one, as all the rooms face the street, the frontage being 44ft. and the depth 18ft. The ceiling of the drawing-room was executed in selenitic cement *in situ* by Mr. Priestly from a sketch of one at Audley End. The chimney-piece was designed by Mr. Lethaby and shown in the first Arts and Crafts Exhibition. The plasterwork of the boudoir ceiling was designed by Mr. Heywood Sumner, and executed on the spot by Mr. Priestly. A cedar chimney-piece in the smoking-room was designed by Mr. W. A. S. Benson, and executed, including the carving, at his works. The drawing-room, hall and staircase are panelled and painted white.

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Enquiries Answered.

The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Right to employ Royal Arms.

GLASGOW.—A. S. writes "Reverting to the enquiry and answer in your issue for November 11th last, I have just finished a licensed house, and having called it 'The King's Arms' have had the royal arms inlaid in the vestibule floor and also carved in wood over the doorway. There has not yet been any objection to the use of the same, but a case in the Aberdeen Sheriff Court has been brought to my notice in which a meat salesman was summoned for using the royal arms without warrant. I hope I have not misunderstood your answer."

The use of the royal arms is unquestionably illegal, but, as I pointed out in the issue you mention, their adoption as a sign for a public-house or hotel licensed under the name of "The Royal Arms" would probably be held an exception to the rule. Much would, in my opinion, depend upon the way in which the armorial bearings were utilized. In the case brought before the Aberdeen Sheriff Court the tradesman evidently employed the royal arms in the ordinary way,

thus implying that he held a royal warrant, but presumably you have treated them merely as part of a decorative scheme, whether in the mosaic flooring or as a carved sign. If this was done, I do not think that a case could be made out against the landlord or the licensee.

G. C. R.

Charges by Road Contractor.

CROYDON.—E. B. writes: "Some time ago a client of mine entered into an agreement with a road contractor to form and make several roads on an estate at a certain price per foot run. The contractor in making his charges measures part of the intersecting roads twice and charges a further length at the conjunction of the new roads with the old ones, claiming it to be the custom to do so. It is his contention that this extra charge (4ft. in every instance) covers the cost of additional metalling of a road at the intersection beyond that of metalling the footpath. I shall be glad to have your opinion on the matter, considering that the contractor saw all plans and sections before estimating. I would add that a certain proportion of the roads have no sewers, and the contractor in basing his price took this into consideration and averaged it at so much per foot. I take it that if this is the case, then all measurements should be nett measurements and no allowance made for intersection."

The particulars are not very full; but we presume the contractor was to be paid on the amount of work as measured up. In such

case he is entitled to make the charges referred to. If quantities had been prepared they would have allowed for the increased cost at the intersections. It would have been better for the contractor (as the contract was a little roughly drawn-up) to have mentioned the extra charges for intersections in his tender, as, though perfectly legitimate, they might be apt to cause misunderstanding.

J. H. E. D.

Corsehill Stone.

REIGATE.—S. writes: "A piece of Corsehill stone $7\frac{1}{2}$ by $3\frac{1}{2}$ by 1 weighed 2lb $\frac{3}{4}$ oz. before immersion in water for a week, and then weighed 2lb. $2\frac{1}{2}$ oz. Is this a porous stone as compared with other stones, and would it let the rain penetrate during severe storms?"

No. Your test was severe and the result shows that Corsehill stone is a very good one.

Coppet Berg's "Safe Building."

JOHANNESBURG.—CONSTRUCTION writes: "I have L. de Coppet Berg's 'Safe Building' in two volumes—Vol. 1, fourth edition, revised and published in 1894; Vol. 2 (evidently first edition), published in 1892. Can they be relied on at the present day for information on building construction, especially in connection with the mechanics of the art? Are these the latest editions of this work?"

"Safe Building" is a very good book and may be generally relied upon, though it is slightly out of date in some particulars, and not always economical, and being an American book does not altogether suit English practice. We do not know if there are more recent editions than those you mention. You should obtain "Specification" for the most up-to-date information on practical building construction.

Structural Steelwork.

MANCHESTER.—F. J. A. writes: "I have a girder carried on a wall and on a stanchion (not on top of stanchion). The girder is of 11ft. 6in. span, and I calculate the even weight on same from the gin. wall it carries and the floor it supports (at 3 cwt.) to be 52 tons. I propose to employ two 12 x 6 rolled steel joists with a plate 14in. by $\frac{1}{2}$ in. on top, but do not know whether the usual side bracket plated on to the side of the stanchion will be strong enough. What kind of bracket, &c., should I use? Also, is the following a strong and suitable scheme for a lobby in a fireproof staircase:—Distance between walls 3ft. 3in. Propose to use a 4in. by $1\frac{1}{2}$ in. rolled steel joist cased in 6in. concrete, joists 3ft. apart. Would you advise coke-breeze concrete or ordinary concrete about 5 to 1 and 1in. cement finish? There is a concrete ceiling above the lobby which carries no weight except a 40 gal. cistern. I propose to adopt 3in. by $1\frac{1}{2}$ in. joists 3ft. apart. Will this be right?"

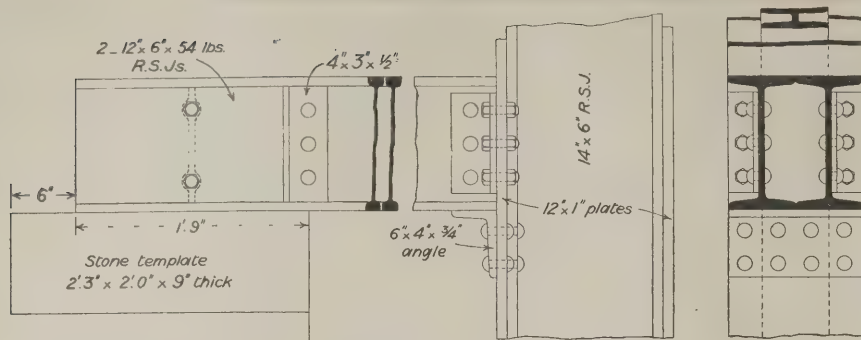
A girder of 11ft. 6in. span carrying a distributed load of 52 tons will have a very severe shearing stress to resist that must not be lost sight of. Two 12 x 6 x 54lb. rolled steel joists without any plate on top will be sufficient to carry a load of 52 tons on this span: it is always desirable to use plain joists if possible, for facility in handling and to avoid delay in delivery. Cast-iron distance-pieces may be bolted between the webs. The shearing stress at the bearings will be 26 tons divided over two webs 10 by $\frac{1}{2}$ less $\frac{1}{8}$ of the depth taken with the flanges

$$= \frac{26}{2 \left(10 \times \frac{1}{2} - \frac{1}{8} \times 10 \times \frac{1}{2} \right)} = 3.9 \text{ tons per sq. in.}$$

This is too much for an unsupported web, and a well-fitted vertical angle, tee or channel bar must be riveted or bolted through on each side over the edge of the bearing surface to assist. The load to be carried by the stanchion bracket being 26 tons, there



ENTRANCE HALL, 52A, BERKELEY SQUARE, W. MERVYN MACARTNEY, ARCHT.

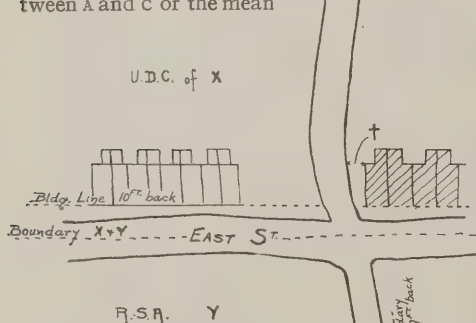


DESIGNING STEELWORK.

will be $\frac{29}{5} = 5.2$ (say, not fewer than 6) steel rivets required, at 5 tons per sq. in. single shear each, to hold the bracket below the rolled joists, which may be designed as shown by the accompanying drawing. If the stanchion is loaded unsymmetrically, as by the one load shown, due allowance must be made for the additional stress produced in it, but as less than half the load is shown and no clue given to the remainder, I cannot say whether the stanchion is strong enough. For the fireproof staircase the lobby floor and ceiling will do as described, if coke-breeze or broken brick concrete is used, but not flint ballast. HENRY ADAMS.

Building Line.

BIRMINGHAM.—SUBSCRIBER writes: "The accompanying sketch relates to an interesting point on which I should like to hear the views of your expert, 'F. S. I.' The line of frontage for proposed buildings (hatched) is defined on the East Street side as 10 ft. back. On the flank however shown thus, †, which, of the following would be correct:—Up to back of footpath as outbuildings of 'The Firs'; 60 ft. back as 'The Firs'; 9 ft. back, as the nearest building in same road, but different authority; the mean between A and C or the mean



between B and C? Under section 3 Public Health Act (Buildings in Streets), 1888, what in the present instance would be the 'front' main wall of house or building A or B?"

(1) I am of opinion that you are entitled to build (as you suggest at A) right up to the footpath if you wish to do so, and this upon the grounds that no building line has been defined by the urban district council in the North Road. The utmost that the urban district council can reasonably ask you to do is to set back 9 ft. (as at C), but I advise that you submit plans showing buildings right up to the footpath, and believe that they will be passed without question. (2) In reference to section 3 of Public Health Act, 1888, there is no doubt that the front wall of building marked A is that referred to: the words "main wall" in the Act are intended to refer to the principal

lines of the building, in contra-distinction to any small projections, such as bays, cornices, steps, &c. F. S. I.

Quantities; Damp-proof Walls.

SOUTHPORT writes: "In taking off quantities of brickwork what is the height at which the work is kept separate—is it over 30 ft.? Does this also apply to all other trades, and should it be stated as such? Should not the carpenter and slater, for instance, know through the bill of quantities the distance from the ground their work has to be? (2) Is a $1\frac{1}{2}$ solid wall, plastic faced on one side with a good damp-proof course, damp-proof? The Government will not, I learn, allow cavity walls unless the wall is made an enormous thickness."

(1) It is not usual to keep the quantities separate of work over 30 ft. high, though some surveyors may do so. The usual method is to include a special item for extra scaffolding, there stating height of building and number of floors. (2) Yes, certainly. If one of the well known building compositions were used instead the work could not well fail to be thoroughly satisfactory.

Stone Balusters.

NORTH WALSHAM.—W. N. writes: "Is there any method for setting stone balusters up a stone staircase: should they start from the noses of the steps, or do they simply take their position up the stairs through the spacing out of same?"

I assume the stone staircase is not a hanging stair without support on outer or well end; otherwise to place a permanent dead load on it in the form of stone balusters would be detrimental to its stability. The usual method is to have an inclined string with horizontal seatings worked on same to receive the balusters. They may take their position in the spacing-out, which of course is to some extent governed by the size of baluster, and not exactly to the nose of step (see sketch). I. W.

Morris's House; Reigate Municipal Buildings; Books on Decoration.

HORSHAM.—ARUN writes: "(1) Have any illustrations or drawings of Morris's house at Bexley Heath ('The Red House') been published other than those in his biography and the single illustration published in THE BUILDERS' JOURNAL some time ago? (2) Do you know of any published drawings of Reigate Municipal Buildings? (3) Kindly recommend some books on the practical decoration of houses, more particularly those dealing with the application of coloured plaster, stained wood and stencil work."

(1 and 2) We do not know of any further illustrations of "The Red House," nor any of Reigate Municipal Buildings. (3) "Elementary Decoration and Practical House Decoration," by James W.

Facey (5s.), and "Decoration of Houses," by E. Wharton and O. Codman (12s. 6d.). These books will be sent from our offices post free for the prices mentioned.

Brickwork in Pier; Changing Air in Room.

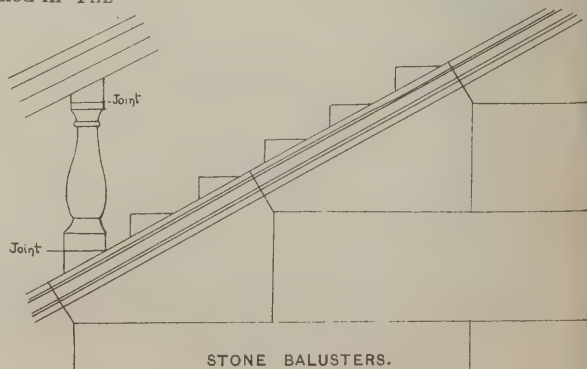
SURVEYOR writes: "(1) How many rods of brickwork are there in a circular pier 4 ft. in diameter and 20 ft. high? (2) The air in a room 30 ft. by 25 ft. by 10 ft. has to be changed three times an hour by air conveyed through a pipe 6 in. diameter: at what velocity must it move in the pipe?"

We do not undertake as a rule to answer examination questions, and we cannot spare space to answer fully such elementary ones as these. (1) About $\frac{1}{4}$ rod. This question is not a practical one, for irregular brickwork in actual practice is stated in feet cube. (2) About 1,910 ft. per minute. The result is obtained by finding the cubical contents of the room and dividing by the area of the pipe, and dividing again by 20 (i.e., $\frac{1}{5}$ of an hour).

Trade and Craft.

The Reck Circulator.

The Reck circulator is a simple and effective heating apparatus for all classes of buildings. It is used in connection with a low-pressure steam boiler and makes an ordinary system at least four times as rapid—this being accomplished without the use of high-pressure steam or mechanical power. The essential parts of the apparatus besides the boiler are the "reheater," fixed close to the former, and the "circulator," fixed near the expansion tank, at the highest part of the system. The steam which is there condensed returns automatically to the boiler, thus keeping up a constant feed. The rapid circulation of the water secures full efficiency of heating coils or radiators in spite of most unfavourable positions, both as to long distance from boiler and to lack of height over same, notwithstanding the fact that the flow and return mains, both horizontal and vertical, are only half the usual diameter. The reduction in the size of pipes in itself is a great advantage, and a saving is effected in builders' work when the apparatus is being installed in an existing building. Owing to the heating surface being more effective and the mains of less size, the cost of providing this apparatus, in medium and large installations, is less than ordinary hot-water apparatus of equal power. The boiler works at a very low steam-pressure, and the automatic draught regulator is more reliable than if applied to a hot-water boiler: consequently the consumption of fuel is reduced. No boiling over of the tank is possible, even when the apparatus is fired with all coils and radiators shut off. The apparatus is very easy to work and is capable of efficient regulation, and being automatic in its action it requires very little attention. It is used extensively in Denmark and Germany for Government and other buildings. The sole licensees for this country are Messrs G. N. Haden & Sons, of Trowbridge.



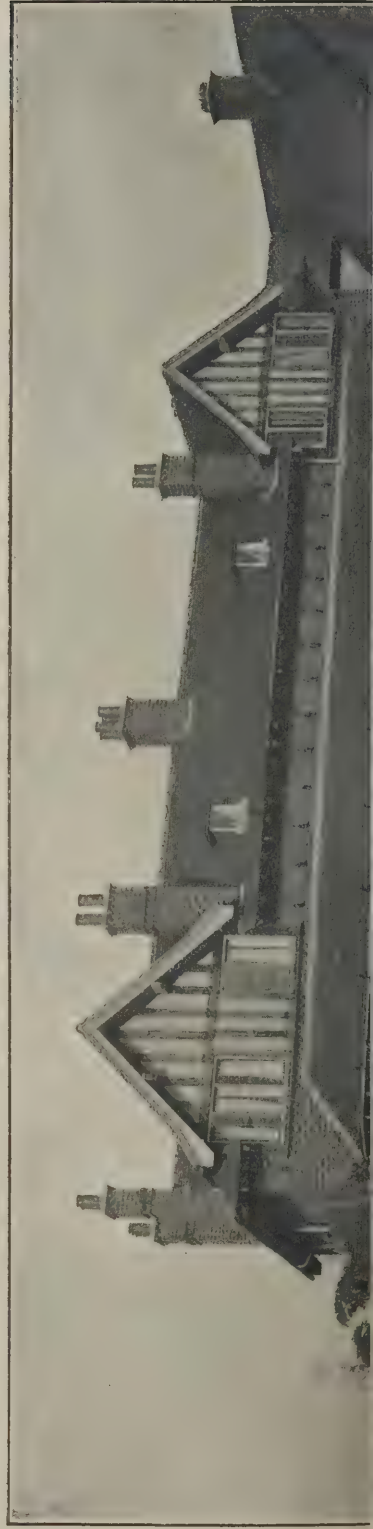
STONE BALUSTERS.

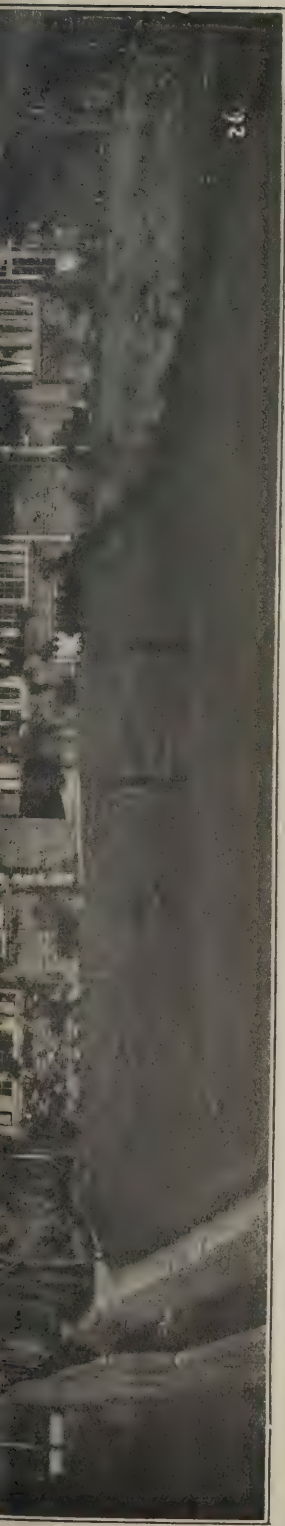
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Supplement to
THE BUILDERS' JOURNAL AND ARCHITECTURAL RECORD,
Wednesday, April 13th, 1904.

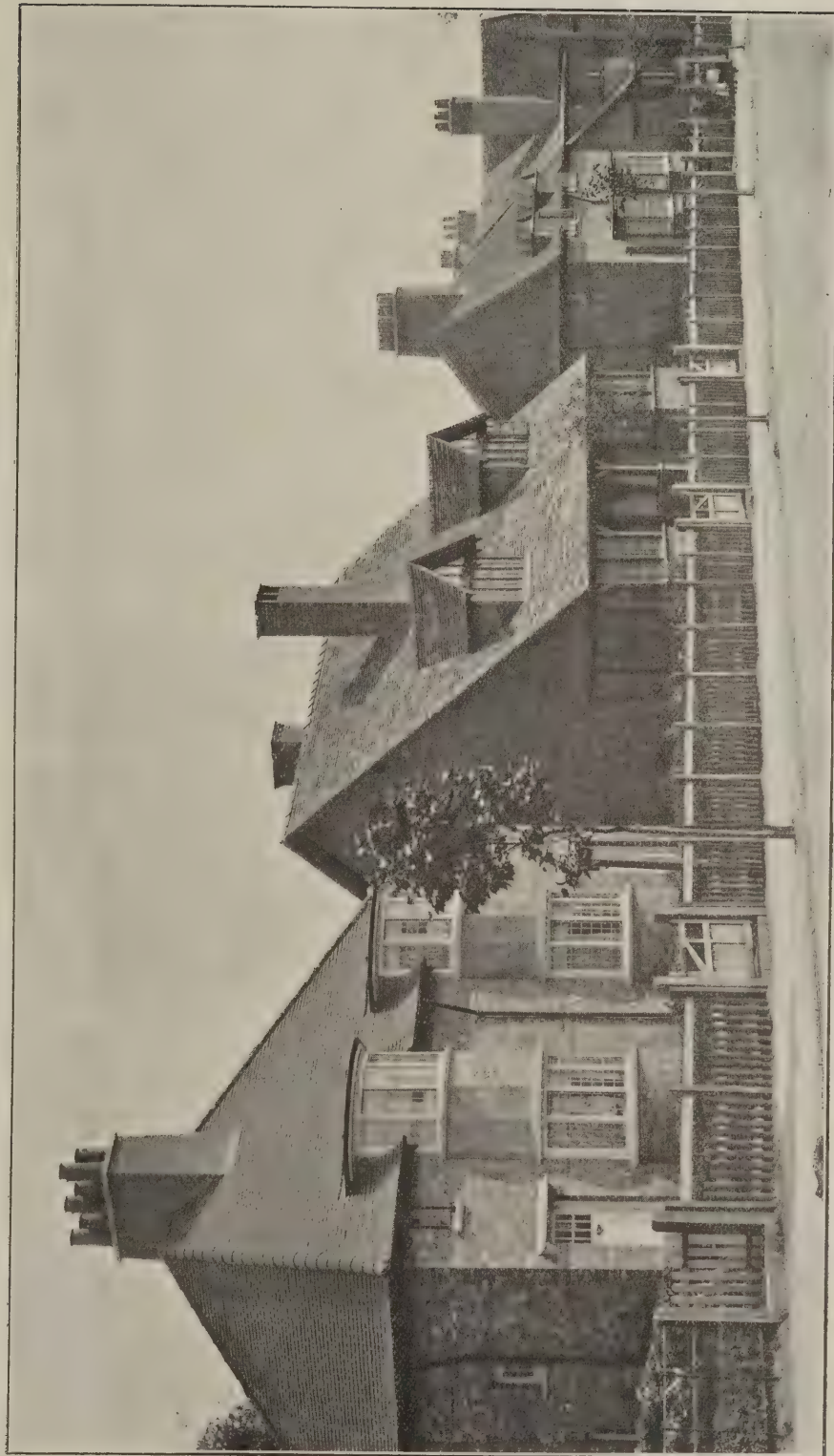


PAIR OF COTTAGES, LINDEN ROAD: FRONT VIEW.





PAIR OF COTTAGES, LINDEN ROAD : BACK VIEW.



COTTAGES, WILLOW ROAD.

SOME COTTAGES IN THE VILLAGE OF BOURNVILLE, NEAR BIRMINGHAM. W. A. HARVEY ARCHITECT.

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A NEW FORM OF HOSPITAL WARD.

MESSRS. HENMAN & COOPER, of Birmingham, send us a copy of the descriptive report accompanying their design for the rebuilding of the Royal Infirmary at Manchester.

After describing the general arrangement of the several departments, they proceed to explain the particular arrangement of the ward blocks and to give reasons why, in their opinion, the special form of ward illustrated on this page is to be preferred. "It was only arrived at after an exhaustive selection, every other known form of ward having been tried and for good reasons abandoned."

"The site, although of ample area, presents difficulties in consequence of its irregular shape, and it became evident that, unless the ward blocks were concentrated on the central portion, corridor communication would be unduly extended. Having determined that a main central corridor is to be preferred, space on either side (except to the south-east) became somewhat limited, and with the extensive accessory accommodation asked for, ordinary parallelogram wards would exceed the limits available. Moreover, a careful survey of the question raised in the conditions as to the location of the ward kitchens and sanitary conveniences led to the conclusion that a central position along such wards is open to grave objections, because the dinner trolleys ought not to be wheeled half-way through the wards and back again. And with the baths and conveniences so placed they are not available for the patients in the double- and single-bed wards. (This is a defect when they are at the outer ends of the wards.) Moreover, such ample projections would unduly overshadow portions of the wards."

"Circular wards would overcome some of the difficulties, but, although occasionally advocated, they are by no means to be preferred, because only under special circumstances, as regards a particular number of beds, and with the approach and all accessory rooms on the north side, can they be considered reasonably satisfactory; the principal objection to them being the great diameter of the enclosed space, which can neither be so well sunned nor so efficiently ventilated by cross-currents as can be the ordinary narrow ward with windows on both sides. To illustrate their respective areas and sizes diagram plans and sections are here shown of an ordinary parallelogram ward, a circular ward and a Y-shaped ward, each for twenty-two beds."

"The Y shape was arrived at in the attempt to work out an arrangement suited to the male surgical wards, two of which, each for sixteen beds, are demanded for each surgical unit; and as the conditions imply that the two wards are to have only one set of accessory rooms, the latter seemed suitably placed on the lower limb of the Y, the two wards forming the two upper arms. This worked out in so practical a manner that it led to the idea of planning the larger single wards on similar lines, and after applying every test that extensive hospital experience could dictate it was surprising to find how many advantages, with no corresponding disadvantages, are gained by its adoption; in fact, it has all the good points of a circular ward (provided the internal angles are well rounded off) without its acknowledged defects. Thus, it is capable of being adjusted to the varying number of beds required; a good view of all the beds can be obtained; superior lighting can be secured and good cross-ventilation; a central fireplace block with ample space around, neither obstructing view nor unduly contracting the central area of the ward; the lengths of the ward blocks are brought within reasonable limits; so far as external appearance is con-

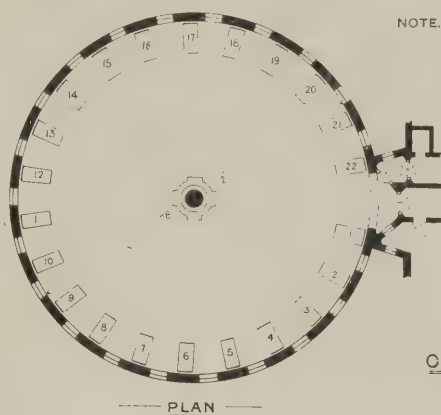
cerned the form lends itself to effective architectural treatment. What more could be desired?"

"Having determined to recommend this Y form, the kitchens and conveniences are reasonably placed at the entrance ends of the wards, because no great distance will have to be traversed from the several beds; and from the single- and double-bed wards the conveniences are approached without the necessity of passing through the large wards."

"It has been thought desirable to plan the accessory rooms on similar lines for each of the principal ward blocks, all of which are approached from the main central

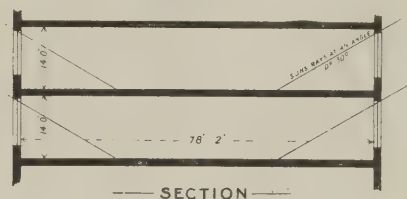
position, placed in the basement corridors, and, for securing hot-water supply and heating, calorifiers would be employed." As regards ventilation they say: "All windows would be constructed to open easily, and fresh air would be admitted to be warmed in winter by the hot-water radiators or pipes, in addition to which ventilating fans would be provided in the large waiting halls, the operating-rooms, laundry, &c., and upcast flues would be arranged for carrying off vitiated air. External windows would be ample in size and number to admit adequate daylight throughout, electricity being employed for artificial illumination."

COMPARATIVE SIZES OF A CIRCULAR, A PARALLELOGRAM, AND A Y SHAPED WARD FOR 22 BEDS

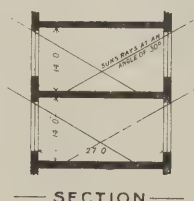
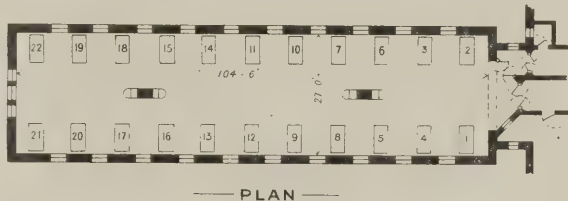


NOTE. The internal diameter of Circular Wards, with Beds at the required distance apart 6' 9in. 6in. centres and 15ft. 6in. at entrance, taken on a circle 4ft. 10in. from the wall, would be for 22 Beds

20 "	78ft. 2in.
19 "	72ft. 0in.
18 "	66ft. 0in.
16 "	50ft. 0in.

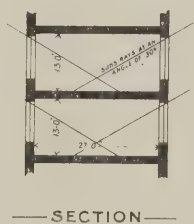
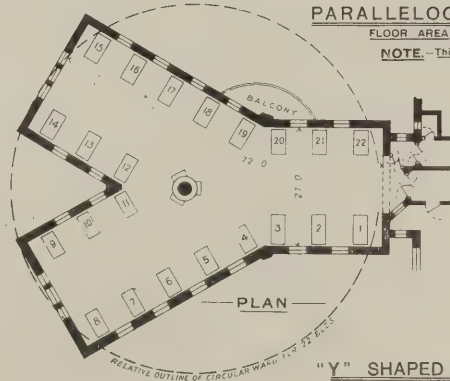


CIRCULAR WARD
FLOOR AREA - 4803 FEET



PARALLELOGRAM WARD
FLOOR AREA - 2821 FEET

NOTE.—This Ward requires a height of at least 14 feet to give 1,800 cubic feet per Bed



"Y" SHAPED WARD
FLOOR AREA - 3488 FEET

NOTE.—This Ward requires a height of under 12 feet to give 1,800 cubic feet per Bed, and as 19 feet is provided the air space per Bed exceeds 2,000 cubic feet

corridor through an intercepting lobby, and each block consists of three buildings connected by means of covered bridges by which both light and air are freely conveyed to the branch corridor; such bridges being practically 'cut-offs' between the several blocks of buildings. This, together with the bridging across of the main corridor at intervals, permits free circulation of air over the site and around the buildings."

For heating the wards Messrs. Henman & Cooper proposed fireplaces. "These would be supplemented by hot-water heating, and there would be fireplaces in all other rooms, and hot-water heating in corridors, halls, chapels, &c. Steam would be distributed in pipes coated with non-conducting com-

Mr. Edwin T. Hall, F.R.I.B.A., draws attention to the omission in our lithograph plate of March 30th of the name of Mr. John Brooke, A.R.I.B.A., as joint architect with him for the rebuilding of the Royal Infirmary at Manchester. This omission we ourselves noticed when the machines were working, but it was not then possible to correct it. Mr. Brooke's name appears, however, under the ground-floor plan published in the same issue and also in the paragraph relating to the competition. We would observe that the out-patients' department, the theatre, and the block for eye, ear and skin were not included in our plan. They are situated to the left of the surgical and casualty pavilions, towards Nelson Street.



THE KNICKERBOCKER TRUST CO. BUILDING, 34TH STREET AND 5TH AVENUE, NEW YORK.
MCKIM, MEAD AND WHITE, ARCHITECTS.

Views and Reviews.

Ruskin at Half-a-Crown.

We must thank Mr. George Allen for having disregarded Ruskin's ideas about the price of books. No doubt we should all of us like to pay half-a-guinea or so for volumes produced in the best possible way, but that is quite out of the question for the majority of people. We welcome, therefore, this cheap edition of Ruskin, and hope it will be bought as widely as it deserves to be. It is well got up, the type being clear and well printed and the paper of quite good quality. "Sesame and Lilies," "The Crown of Wild Olive" (essays on work, traffic and war), "The Two Paths" (on decoration and manufacture), "Time and Tide" (on laws of work), "A Joy for Ever" (on the political economy of art) and these 'Lectures on Art' are now ready, and others will be issued as follows:—"Queen of the Air" (a study of Greek myths), April 18th; "Ethics of the Dust" (on the elements of crystallization), May 2nd; "The Elements of Drawing" (with fifty illustrations), May 18th; "The Eagle's Nest" (on the relation of natural science to art), June 2nd; and "Munera Pulveris" (on the elements of political economy), June 18th.

"Lectures on Art," by John Ruskin. London: George Allen, Charing Cross Road. Cloth, 2s. 6d., leather 3s. 6d. —net.

Stained Glass at South Kensington.

This book is intended as a handbook to the glass and the drawings of glass at the Victoria and Albert Museum, from which source most of the illustrations are taken; but it is by no means of the nature of a guide-book, Mr. Day having written a general history of the art and illustrated it by the examples mentioned. After a short introductory chapter he goes on to speak of the styles, accepting Mr. Winston's division of the periods, and then proceeds, chapter by chapter, to deal with the characteristics of each, adding a short survey of glass design, a chapter on materials, and a concluding

chapter on "the zig-zag and unequal course of the glazier's and glass-painter's art." At the end of the book is given an inventory of stained glass exhibited in the Museum, arranged approximately in chronological order.

Mr. Day has gathered his matter together in a manner that makes attractive and instructive reading, so that the book can be recommended to all who are interested in the subject. It has been published for the Board of Education and will undoubtedly cause considerably more public attention to be given to the glass at South Kensington.

"Stained Glass," by Lewis F. Day. London: Chapman & Hall, Ltd., 11, Henrietta Street, price 4s.

The Saw Mill.

The author of this book observes in his preface that one of the earliest writers of note on the subject of wood-working machinery was John Richards, a practical engineer with wide experience both in America and England, whose two books, published in 1870 and 1873, are now out of print. Mr. Powis Bale and Mr. Stafford Ransome at more recent dates have added to the literature of the subject, the former being responsible for several useful works dealing with the arrangement and management of saw mills, and the latter's handbook in Rider's Technical Series being chiefly intended as a guide to the purchaser in doubt as to what is the most efficient type of machine for the purpose he has in view. The aim of the present volume is different, as the writer looks at wood-working machinery from the standpoint of the man who has himself to use the machine, or from that of the manager of the saw mill. Mr. Blackmur has had a long practical experience of wood-working machinery, and in this volume he gives a summary of that experience, thus furnishing a large amount of valuable information in a condensed form. The book comprises about 150 pages and is essentially practical.

"Saw Mill Work and Practice," by W. J. Blackmur. London: William Rider & Son, Ltd., 164, Aldersgate Street, E.C., price 3s. 6d.

Keystones.

A Church at Leicester is to be erected in St. Andrew's parish from designs by Mr. G. F. Bodley, R.A.

Change of Address.—Mr. W. E. H. Clarke, architect and surveyor, has moved his offices from 4, Portland Street to Cathedral Chambers, King Street, Hereford.

Partnership.—The work of Mr. John W. Simpson, F.R.I.B.A., and of Mr. Maxwell Ayrton, A.R.I.B.A. is to be carried on in partnership at 3, Verulam Buildings, Gray's Inn, London, W.C.

A Congregational Church at Wolverhampton is being erected from designs by Messrs. Crouch & Butler, Newhall Street, Birmingham. The builders are Messrs. G. Cave & Son, Wolverhampton. The cost will be £1,700.

Hobbies, Ltd. (12, Paternoster Square, E.C.) send us their photographic catalogue for 1904. The department is under the direction of Mr. Charles W. Hastings, for many years editor of "The Amateur Photographer."

An International Congress of Architects at Madrid was opened last Monday week, when the King of Spain received the delegates. Excursions to Toledo, Alcala and elsewhere were made. The formal opening took place on Tuesday in the University, when the Exposition of Monumental Art was inaugurated.

Liverpool Pierhead Baths: The Latest Scheme.—Last Wednesday the Liverpool City Council discussed a proposal of the Baths Committee that the engineer and chief superintendent should arrange for complete sketch drawings for proposed baths at the Pierhead, on the George's Dock site, at an expenditure not to exceed £60,000. On a division a tie resulted. Thereupon the Lord Mayor gave his casting vote in favour of the motion, which was accordingly adopted.

A Burne-Jones Exhibition.—An exhibition of drawings and studies by the late Sir Edward Burne-Jones will be opened on April 18th at the Leicester Galleries, Leicester Square. It has been organized with the assistance of Sir Philip Burne-Jones, and will include over a hundred drawings, most of which will now be seen for the first time. Mr. Sidney Colvin, Keeper of the Department of Prints and Drawings in the British Museum, will contribute a preface to the catalogue.

Plans Wanted for new Music Hall.—In the "Rochdale Observer" of March 30th the following advertisement appeared:—

RE CIRCUS OF VARIETIES, NEWGATE, ROCHDALE.

The proprietors of the above place of entertainment offer a PRIZE OF £5 for the BEST PLAN OF A NEW MUSIC HALL to be erected on the site of the present Circus of Varieties in Newgate, Rochdale. Seating capacity, 2,700 to 3,000. The decision as to the best plan to be given by a well-known Music Hall Manager, whose name can be supplied to any bona-fide competitor, if required, on application.—Apply to Mr. S. L. LEE, Circus of Varieties, Rochdale.

Baths at Birmingham.—The Birmingham City Council have selected twelve architects practising in Birmingham to send in designs for the new baths for Balsall Heath. The amount of expenditure sanctioned, exclusive of the engineering works, architect's commission, quantity surveyor's charges, and clerk of works' salary, &c., is £20,000. The water area of the first-class swimming-bath will be 8ft. by 32ft., the depth varying from 4ft. 6in. to 7ft. That of the second-class bath will be 7ft. by 32ft., the varying depth being the same as in the first-class. There will be sixteen men's first-class and a similar number of men's second-class private or slipper baths, with waiting halls, and fourteen first-class and second-class women's private baths.

Liverpool Architectural Society.—Mr. Philip C. Thicknesse is proposed as the new president, and Messrs. T. E. Eccles, F.R.I.B.A., and Hastwell Grayson, M.A., F.R.I.B.A., as the new vice-presidents.

Dungeness new Lighthouse, which has taken two years to construct, has just been brought into use. It was designed by Mr. T. Matthews, engineer-in-chief to the Corporation of Trinity House. Next to the new light at Cape Grisnez, the new Dungeness light is the most powerful on the English Channel, and is visible for $17\frac{1}{2}$ miles. The old lighthouse which it replaces was built 114 years ago. The new lighthouse is circular in shape and 140ft. high from base to top of lantern. In addition to the high lighthouse a low light 40ft. high has been erected close to the shore-line, over a powerful foghorn. The luminant used in the lantern is oil-gas, burnt on the incandescent principle, the oil being vaporized.

The new Eastbrook Hall, Bradford, which has been erected in Leeds Road, was opened recently. The cost is estimated at £24,000. The architects were Messrs. W. J. Morley & Son. The contractors were:—J. Brown & Son, Bingley, masons; Greenhow & Murgatroyd, Keighley, joiners; G. Thompson, Leeds, plumber; T. Bolton, Bradford, plasterer; Hill & Nelson & Son, Bradford, slaters; F. Holdsworth, Shipley, painter; R. Boys, Bradford, stonecarver; A. Whitehead, Leeds, faience work; Stott & Co., Oldham, heating and ventilating; W. H. Horne, Ltd., Idle, fibrous plaster; W. Blythe, Bradford, leaded lights; and C. Pratt & Sons, electric lighting and furnishing.

The new Promenade at Blackpool is making rapid progress. The scheme was begun at the end of May last and the total cost will be about £350,000. At the present time there are 549 men employed, and the mechanical plant in operation includes seven steam cranes, two electrically-driven centrifugal pumps, three pulsometer pumps, two steam pile drivers and fifty steel waggons. The promenade to-day is 167ft. wide; the foot-path on the east side next to the garden walls has a minimum width of 15ft.; next to this is the carriage drive 40ft. wide, and then comes an island footpath 10ft. wide; the double-line tramway has a width of $17\frac{1}{2}$ ft. and on the sea side of it is a promenade 85ft. wide. A prominent feature of the new esplanade is the asphalted carriage-drive and promenade. This has been carried out by Messrs. Stansbury and the Northern Quarries Co. All the work is under the direction of Mr. J. S. Brodie, the borough surveyor, who evolved the scheme.

Builders' Notes.

The new Infirmary at Chesterfield (Messrs. Rollinson & Son, architects) has been fitted throughout with inlet ventilators by the Offa Ventilating Co., 64, Basinghall Street, E.C.

The new Union Infirmary, Chesterfield, has been supplied by Messrs. E. H. Shorland & Brother, of Manchester, with their patent Manchester stoves, both single and double-fronted, with ornamental tiled sides and descending smoke flues.

New Docks at Swansea.—Thirteen tenders were received for the construction of new docks and works, and that of Messrs. Topham, Jones & Railton, Great George Street, Westminster, has been accepted, the amount, which was the lowest quoted, being £796,581. It is understood that the contract does not include the final completion of the whole of the dock works, as dock gates and hydraulics are excluded. The successful firm is now constructing a new dock at Cardiff.

The New York Strike.—The threat of the New York employers in the building trades to lock out all their workmen in all branches of the trade unless the bricklayers terminated their strike has had its effect, 15,000 bricklayers having agreed to return to work pending arbitration of their differences with the masters.

A dispute at Barrow has arisen between the master-builders and their men. The former desired all the trades, with the exception of painters, to work shorter hours in winter. At present the winter hours are fourteen weeks at forty-nine hours, and the men are asked to work forty-seven hours during November and February and $41\frac{1}{2}$ during December and January. In allowing "walking" time they stipulated that the Central Railway Station gates shall be considered the centre of the town instead of the Town Hall, as at present. It has been agreed to refer the matter to arbitration on the condition that the men shall continue working on the old terms until the decision, and the joiners, plumbers, plasterers and bricklayers have resumed work.

Labour in the Colonies.—The Emigrants' Information Office, 31, Broadway, Westminster, S.W., in their current circular state that this is the best time of the year for emigration to Canada. The building, metal, engineering and manufacturing trades generally continue busy, and skilled men such as carpenters, bricklayers, painters, plumbers, &c., have no difficulty in procuring work at good wages. In Australia there is not much demand for more labour. Western Australia and Queensland offer perhaps the best openings at the present time for carpenters, masons and bricklayers. In New Zealand nearly all trades are well employed. The labour market in Cape Colony is overstocked, and a great many mechanics and labourers are unable to obtain work. There is therefore now no opening for mechanics in the building or other trades. Employment in the building and other trades in Natal has fallen off, so that labour is plentiful, and large numbers of unskilled workers and indifferent tradesmen are unable to obtain employment. No one can enter the Transvaal without a permit, and persons are warned against going there at the present time in search of work. The building trades are fairly busy, but the supply of labour is more than sufficient.

Building By-Laws Reform Association.—The first annual report has just been issued from the offices of the Association, 45, Parliament Street, S.W., price 6d. The statement of accounts shows a balance in hand of £13 4s. 8d.—The following are the chief objections raised by Mr. T. Myddelton Shallcross, of Liverpool, in regard to this subject:—(1) Building by-laws should be enunciations of sound principles of construction and sanitation, instead of detailed structural methods of complying with them, and they should be strictly enforced in urban and rural districts alike for all kinds of buildings and upon all classes of society. (2) As many landlords in rural districts, within a quite recent period when there were practically no rural building by-laws in force, did not then show avidity to build suitable and sanitary cottages, there is no reason to suppose that the abolition of certain building by-laws to-day would make such landlords any more desirous to build efficient cottages than formerly; and there appears to be no evidence to show that the proper control of building by the authorities is less desirable in rural than in urban districts; whilst the existence of such newly-formed bodies as the Rural Sanitary and Housing Association implies that quite the reverse state of things is the fact. The action of the Council of the Incorporated Association of Municipal and County Engineers in recently

appointing a committee to consider necessary amendments of the Model building by-laws is evidence of their defectiveness, and the latter will only be permanently remedied by a change of principle instead of the mere variation of the resultant details.

Coming Events.

Wednesday, April 13.

INSTITUTE OF SANITARY ENGINEERS.—Meetings of General Purposes and Finance Committee at 4 p.m., and Election Committee at 5.15 p.m. Mr. A. H. Scott on "Combined Drainage," at 7 p.m.

SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part II.).—Mr. W. Hunting on "The Names and Situations of the Organs of the Body in Animals," at 7 p.m. Inspection and Demonstration at the London Soap Works, Bow, at 3 p.m., arranged by Messrs. E. Cook & Co., Ltd.

INSTITUTION OF CIVIL ENGINEERS.—Students' Visit to the works of the Great Northern, Piccadilly and Brompton Railway, in course of construction, at 2.30 p.m.

DANTE SOCIETY.—Mrs. Craigie (John Oliver Hobbes) on "The Art of Portraiture: Dante and Goya," at 8.30 p.m.

Thursday, April 14.

INSTITUTION OF MECHANICAL ENGINEERS.—Anniversary Dinner.

ROYAL INSTITUTION.—Professor Dewar, M.A., on "Dissociation"—I., at 5 p.m.

INSTITUTION OF ELECTRICAL ENGINEERS.—(1) Discussion on paper on "Direct-reading Measuring Instruments for Switchboard Use," by Messrs. K. Edgcombe and F. Punga. (2) Mr. M. B. Field on "Eddy Currents and Eddy Current Losses in Cable Sheaths," 8 p.m.

Friday, April 15.

SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part II.).—Mr. James King, M.R.C.V.S., on "Diseased Meat," at 7 p.m.

CITY OF LONDON COLLEGE SCIENCE SOCIETY.—Mr. C. Welch on "The Ancient Livery Guilds of the City of London," at 8 p.m.

INSTITUTION OF MECHANICAL ENGINEERS.—Discussion on paper, "Compound Locomotives in France," by M. Edouard Sauvage, Chief Consulting Engineer, Western Railway of France, at 8 p.m.

Saturday, April 16.

ROYAL INSTITUTION.—Mr. Cyril Davenport on "Mezzotints," at 3 p.m.

Monday, April 18.

SURVEYORS' INSTITUTION.—Mr. Thomas Blashill on "London Streets and London Street Traffic," at 8 p.m.

SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part II.).—Mr. W. Hunting, F.R.C.V.S., on "Practical Methods of Stunting and Slaughtering Animals," at 7 p.m.

LIVERPOOL ARCHITECTURAL SOCIETY.—Annual General Meeting, at 6 p.m. Election of Council and Officers.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.—Mr. E. S. Prior on "The Statues of Wells Front, with some Contemporary Foreign Examples of Sculpture," at 8 p.m.

Tuesday, April 19.

SOCIETY OF ARTS (Applied Arts Section).—Mr. Alfred East, A.R.A., on "The Sentiment of Decoration," at 8 p.m.

Wednesday, April 20.

GLASGOW ARCHITECTURAL ASSOCIATION.—Mr. A. Hessel Tiltman, F.R.I.B.A., on "Baths and Wash-houses," at 8 p.m.

SOCIETY OF ARTS.—Mr. Mervyn O'Gorman, M.L.E., on "Motor Cars for Popular Use," at 8 p.m.

INSTITUTE OF SANITARY ENGINEERS.—Extraordinary General Meeting at 4.30.

SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part II.).—Mr. E. Petronell Manby, B.A., M.D., on "The Appearance and Character of Fresh Meat—Organs, Fat, Blood; Fish, Poultry, Milk, Fruit, Vegetables and other Food; Preserving and Storing Meat and other Foods," at 7 p.m. Inspection and Demonstration at Harrison & Barber's Knacker Yard, Winthrop Street, Whitechapel, E., at 3 p.m., conducted by Mr. H. King Shaw.

EDINBURGH ARCHITECTURAL ASSOCIATION.—Annual Business Meeting and President's Valedictory Address, at 8 p.m.

Thursday, April 21.

INSTITUTION OF CIVIL ENGINEERS ("James Forrest" Lecture).—Mr. Dugald Clerk, M.I.C.E., on "Internal Combustion Engines," at 8 p.m.

Friday, April 22.

ARCHITECTURAL ASSOCIATION.—Mr. W. Gilbert on "Craftsmanship," at 7.30 p.m.

SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part II.).—Mr. E. Petronell Manby, B.A., M.D., D.P.H., on "The Hygiene of Byres, Lairs, Cowsheds, Slaughter-Houses, &c.," at 7 p.m.

Saturday, April 23.

ARCHITECTURAL ASSOCIATION.—Sixth Spring Visit. EDINBURGH ARCHITECTURAL ASSOCIATION.—Visit to Glasgow under the auspices of the Glasgow Architectural Association.

Complete List of Contracts Open.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
BUILDING:			
April 14	Airdrie, Scotland—Post Office	Commissioners of H.M. Works, &c.	Secretary, H.M. Office of Works, &c., Storey's Gate, London, S.W.
" 14	London, E.—Generating Station	Stepney Borough Council	M. W. Jameson 15 Great Alie Street, Whitechapel, E.
" 14	North Clifton, near Newark—Re-roofing Church	—	C. H. Fowler, Architect, The College, Durham.
" 14	Richmond, Yorks—Mortuary	—	Clark & Moscrop, Architects, Darlington.
" 14	Glasgow—Lime, Cement, Bricks, &c.	Corporation	T. Melvin, General Manager, Sewage Works, Swanston Street, Glasgow.
" 15	Brighthouse—Mission Hall	—	A. G. Dalzell, 15 Commercial Street, Halifax.
" 15	Great Yarmouth—Showrooms	—	J. E. Teasdal, 3 Queen Street, Great Yarmouth.
" 15	Harrow—Stables, &c.	Urban District Council	J. P. Bennetts, Engineer, Harrow.
" 15	Kingstown, Ireland—One Hundred Artizans' Dwellings	Urban District Council	M. A. Manning, Town Clerk, Town Hall, Kingstown.
" 15	Newark—Alterations to Houses	Municipal Charities Trustees	Saunders & Saunders, Architects, Imperial Chambers, Newark.
" 15	Glasgow—Lime and Cement	Corporation	J. Young, 102 Renfield Street, Glasgow.
" 15	Newry, Ireland—Extension, &c., to Hospital	Down County Council	R. MacIlwaine, Sec. County Council, Courthouse, Downpatrick.
" 16	Loughborough—Buildings	Corporation	A. E. King, Architect, Baxter Gate, Loughborough.
" 16	Rodborough—Alterations, &c.	Gloucestershire County Council	Surveyor's Office, Shire Hall, Gloucester.
" 16	Egremont, Cumberland—Windows, &c.	—	J. Cowan, Surveyor, Egremont, Cumberland.
" 16	Udny, Aberdeen—Additions, &c., to House and Steading	—	W. Davidson, Architect, Ellon.
" 16	York—Inn	S. Smith	T. Wian & Sons, 92 Albion Street, Leeds.
" 16	Sutton Coldfield—Town Hall and Fire Station	Corporation	Magston & Eddison, 7 Gt. James St., Bedford Row, London, W.C.
" 16	Dundee—Shed	Harbour Trustees	J. Thompson, Harbour Engineer, Dundee.
" 18	Hastings—Alterations, &c.	Corporation	P. H. Palmer, Borough Engineer, Town Hall, Hastings.
" 18	Portsmouth—Cookery Centre	Education Committee	A. Bone, Architect, Cambridge Junction, Portsmouth.
" 18	Salford—Partitions, &c.	Corporation	Borough Engineer, Salford.
" 18	Todmorden—Electricity Buildings, &c.	Corporation	Electrical Engineer, Todmorden.
" 18	Llanrhaidr, Mont.—Chapel	—	Shayler & Ridge, Architects, Bank Chambers, Oswestry.
" 19	Henley-on-Thames—Alterations, &c., to Station Buildings	Great Western Railway Co.	G. K. Mills, Secretary, Paddington Station, London.
" 19	London, N.—Bandstand	Tottenham U.D.C.	E. Crowne, Clerk, Tottenham.
" 19	Brighton—Alterations to Fire Station	Town Council	F. J. C. May, Surveyor, Town Hall, Brighton.
" 19	London, W.—Reconstruction of Station	Great Western Railway Co.	Engineer, Paddington Station, London.
" 19	Northorpe, Lincs—Church Restoration	—	G. R. Boreham, 24 John Street, Sunderland.
" 19	Sunderland—Engine House, &c.	South Shields Water Co.	T. & C. Hawksley, 30 Great George Street, Westminster, S.W.
" 20	New Tredegar, Wales—Stables, Fire Station, &c.	Urban District Council	J. H. Lewis, Surveyor, Blackwood, Mon.
" 20	Birkenhead—Stables, &c.	Corporation	C. Brownridge, Borough Surveyor, Town Hall, Birkenhead.
" 21	Bilston—Hospital	Urban District Council	J. P. Wakeford, Surveyor, Town Hall, Bilston.
" 21	Gillingham, Kent—Thirty Cottages	—	E. J. Hammond 21 Balmoral Road, Gillingham.
" 21	Liverpool—Sorting Office	Commissioners of H.M. Works, &c.	Secretary, H.M. Office of Works, &c., Storey's Gate, London, S.W.
" 21	Seaford, Liverpool—Sorting Office	Commissioners of H.M. Works, &c.	Secretary, H.M. Office of Works, &c., Storey's Gate, London, S.W.
" 21	Skewen—Church	T. C. Phillips	J. C. Rees, Architect, Neath.
" 22	Winscombe, Somerset—House	—	H. Price & W. Jane, Architects, Waterloo St., Weston-super-Mare.
" 22	Seaham, Durham—Coastguard Signal Station	—	Director of Works Dept., Admiralty, 2 Northumberland Av., W.C.
" 22	Leigh, Lancs—Infirmary	—	J. C. Prestwich, Architect, Bradshawgate Buildings, Leigh.
" 22	Llandaff, Wales—Laboratory, &c.	Glamorgan County School	G. Halliday, 14 High Street, Cardiff.
" 23	Ludlow—Additions to Workhouse	Guardians	W. W. Robinson, 10 King Street, Hereford.
" 23	Stanwell, Middlesex—Bridge	County Council	H. T. Wakelam, County Engineer, Middlesex Guildhall, Westminster, S.W.
" 25	Bristol—Repairs to Baths	Baths Committee	T. H. Yabbicom, 63 Queen's Square, Bristol.
" 26	Greenwich—Electricity-Generating Station	London County Council	Architect's Department, 13 Charing Cross, S.W.
" 26	Thornton, Bradford—Stone, &c.	Queensbury Industrial Soc., Ltd.	M. Hall 1 Harrison Road, Halifax.
" 27	Hereford—Additions to Hospital	—	Nicholson & Hartree, Architects, Hereford.
" 28	Buckfastleigh—Three Cottages	Co-operative Society	A. Warren, Architect, Fore Street, Buckfastleigh.
" 28	Elanclydach, Wales—School	Rhondda U.D.C.	J. Rees, Architect, Hillside Cottage, Pentre.
" 29	Whitby and Robinhood's Bay, Yorks—Coastguard Stations (two contracts)	—	Director of Works Department, Admiralty, 21 Northumberland Avenue, London, W.C.
" 31	Halifax—Two Houses	School Board	A. G. Dalzell, 15 Commercial Street, Halifax.
May 3	Holyhead—School	Portsea Island Mutual Co.-op. Soc., Ltd., Committee	R. E. Pritchard, Clerk, Drug Hall, Holyhead.
" 4	Portsmouth—Business Premises	Guardians	G. E. Smith, 145 Victoria Road North, Portsmouth.
" 6	Poplar, E.—Alterations and Additions to Houses	—	J. & W. Clarkson, 136 High Street, Poplar, E.
ENGINEERING:			
Apr. 14	Woolwich—Electric Crane	Borough Council	F. Sumner, Borough Engineer, Maxey Road, Plumstead.
" 15	Belfast—Electrical Plant	Gas and Electric Committee	V. A. H. M'Cowan, City Electrical Engineer, Belfast.
" 15	Cavan, Ireland—Road Roller	County Council	W. Finlay, Secretary, Cavan County Council, Court House, Cavan.
" 18	Belfast—Engines, &c.	Harbour Commissioners	G. F. L. Giles, Harbour Engineer, Belfast.
" 18	London, S.W.—Switchboards	Westminster Electric Supply Corporation, Ltd.	Kennedy & Jenkin, 17 Victoria Street, Westminster, S.W.
" 18	Grimsby—Wiring, &c.	Education Committee	W. A. Vignoles, Borough Electrical Engineer, Corporation Electricity Works, Grimsby.
" 18	Bristol—Heating, &c.	Education Committee	Latrobe & Weston, 20 Clare Street, Bristol.
" 18	East Dereham, Norfolk—Gasholder, &c.	Urban District Council	H. Kitson, Gas Manager, East Dereham.
" 18	Edinburgh—Railway	North British Railway Co.	Blyth & Westland, 135 George Street, Edinburgh.
" 18	Hipperholme, Yorks—Pipe-laying, &c.	Urban District Council	G. W. Thompson, Surveyor, Council Offices, Hipperholme.
" 18	Waltham Abbey—Engine, &c.	Urban District Council	W. T. Streater, Engineer, Highbridge Street, Waltham Abbey.
" 18	Manchester—Track Work, &c.	Tramways Committee	J. M. M'Elroy, 55 Piccadilly, Manchester.
" 19	Cannock, Staffs—Alteration, &c., to Water-Supply System	Guardians	Wilcox & Raikes, 63 Temple Row, Birmingham.
" 19	Clarbeston Road and Letterston, Pembroke—Railway	Great Western Railway Co.	G. K. Mills, Secretary, Paddington Station, London.
" 20	Egremont, Cheshire—Branch Railway	Wallasey U.D.C.	J. H. Crowther, Engineer, Egremont, Cheshire.
" 21	Swansea—Hydraulic Accumulator, Cranes, &c. (two contracts)	Harbour Trustees	A. O. Schenk, Engineer, Harbour Offices, Swansea.
" 22	North Tawton—Reservoir, &c.	Rural District Council	G. L. Fulford, Solicitor, Northtawton.
" 23	Edinburgh—Extension Switchboard Panel, &c.	Corporation	Resident Electrical Engineer, Dewar Place Station, Edinburgh.
" 23	Barrow-in-Furness—Dam, &c.	Corporation	A. H. Strongtharm, Engr., Ramsden Square, Barrow-in-Furness.
" 25	Pietermaritzburg, Natal—Coaling Plant	Government of Natal	Agent-General for Natal, 26 Victoria Street, Westminster, S.W.
" 25	Stanwell, Middlesex—Bridge	County Council	H. T. Wakelam, County Engineer, Middlesex Guildhall, Westminster, S.W.
" 26	Park Royal—Electric Plant	Great Western Railway Co.	Kennedy & Jenkin, 17 Victoria Street, London, S.W.
" 27	Gateshead—Widening of Railway	North-Eastern Railway Co.	C. A. Harrison, Central Station, Newcastle-upon-Tyne.
" 28	Bradford—Reservoir, &c.	Corporation	Waterworks Engineer, Town Hall, Bradford.
" 29	Flamborough, Yorks—Well	Bridlington R.D.C.	Elliott & Brown, Engineers, Burton Buildings, Parliament Street, Nottingham.
" 30	Golspie, Scotland—Bridge	Sutherland County Council	A. Argo, County Clerk, Golspie.
May 9	Natal, South Africa—Electric Telpherage	Government	Sir Walter Peace, 26 Victoria Street, London, S.W.
" 9	Wesham, Lancs—Warming and Hot-water Supply	Foyle Union Guardians	Hayward & Harrison, Architects, Accrington.
IRON AND STEEL:			
Apr. 14	Glasgow—Stores	Corporation	T. Melvin, General Manager, Sewage Works, Swanston Street, Glasgow.
" 15	Glasgow—Plumber's Materials, Paints, &c.	Corporation	J. Young, 102 Renfield Street, Glasgow.
" 16	Canterbury—Painting at Cemetery	Cemetery Committee	A. C. Turley, City Surveyor, Guildhall Street, Canterbury.
" 25	Bristol—Ironmongery &c.	Health Committee	General Medical Superintendent, City Hospitals, 40 Prince Street, Bristol.
" 25	London, E.C.—Railway Stores	Madras Railway Company	W. H. Cole, 61 New Broad Street, London, E.C.
" 26	Ilkley, Yorks—Steelwork for Bridge	Wnarfedale Estate Co., Ltd.	J. B. Fraser, 8 Park Square, Leeds.
PAINTING AND PLUMBING:			
Apr. 14	Glasgow—Brushes, Oils and Paints	Corporation	T. Melvin, General Manager, Sewage Works, Swanston Street, Glasgow.
" 15	Glasgow—Tramway Stores	Corporation	J. Young, 102 Renfield Street, Glasgow.
" 18	Wigan—Stores	Gas Committee	J. Timms, Engineer, Borough Gasworks, Wigan.
" 20	Egremont, Cheshire—Stores	Wallasey U.D.C.	J. H. Crowther, Engineer, Great, near Birkenhead.
" 20	Congleton, Cheshire—Painting, &c., at Workhouse	Guardians	H. Ferrand, Clerk, Union Offices, Sandbach.
" 25	Falldingworth—Painting, &c.	Wesleyan Chapel Trustees	G. Stamp, Falldingworth.
May 2	Kingston-on-Thames—Painting	Guardians	W. H. Hope, Architect, Seymour Road, Hampton Wick.

Complete List of Contracts Open — *continued*

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
ROADS AND CARTAGE:			
April 14	Bognor, Sussex—Tar Paving	Urban District Council	O. A. Bridges, Surveyor, Bognor, Sussex.
" 14	Helmsley, Yorks—Whinstone and Slag	Rural District Council	R. Pearson, Clerk, Helmsley.
" 14	Brighton—Granite Spalls	Town Council	F. J. C. May, Surveyor, Town Hall, Brighton.
" 14	Gravesend—Materials, &c.	Town Council	F. T. Grant, Borough Surveyor, Town Hall, Gravesend.
" 14	Northwich—Road, &c.	Urban Hospital Committee	J. Cawley, Architect, Northwich.
" 15	Poole—Granite	Corporation	J. Elford, Borough Surveyor, Poole.
" 15	Preston, Lancs—Paving, &c.	Rural District Council	Borough Surveyor, Town Hall, Preston.
" 16	Hunslet, Leeds—Road Materials	Urban District Council	W. B. Pindar, Clerk, Glasshouse Street, Hunslet, Leeds.
" 16	Reigate—Materials	Urban District Council	Borough Surveyor, Municipal Buildings, Reigate.
" 18	Hoyland, near Barnsley—Materials	Urban District Council	W. P. Young, Surveyor, Town Hall, Hoyland, near Barnsley.
" 19	Chadderton, Lancs—Materials, &c.	Urban District Council	H. Hoyle, Town Clerk, Town Hall, Chadderton.
" 19	Carshalton—Making-up	Rural District Council	W. W. Gale, Surveyor, Council Offices, High Street, Carshalton.
" 20	Houghton-le-Spring, Durham—Material	Fulham Borough Council	D. Balfour, Surveyor, Houghton-le-Spring, R.S.O.
" 20	London, S.W.—Making-up	Perrin & Woolsey	F. Wood, Borough Surveyor, Town Hall, Fulham, S.W.
" 20	Slough—Roads and Sewers	Rural District Council	Lee & Farr, Architects, Slough.
" 20	Tendring, Essex—Flints	Borough Council	J. Bell, Highway Surveyor, Weeley, Colchester.
" 20	Hammersmith—Flagging Footpath	Urban District Council	H. Mair, Borough Surveyor, Town Hall, Broadway, Hammersmith.
" 21	Cheshunt—Channelling	Rutland County Council	R. H. Jeffes, Surveyor, Manor House, Cheshunt.
" 21	Oakham—Materials	Corporation	B. A. Adam, Clerk, Oakham.
" 22	Seaham Harbour—Approach Road	Bedwellty U.D.C.	Director of Works Dept., Admiralty, 21 Northumberland Av., W.C.
" 23	Bradford—Road Metal	Town Council	J. H. Cox, City Surveyor, Town Hall, Bradford.
" 23	New Tredegar, Wales—Lowering Road	Town Council	J. H. Lewis, Surveyor, Blackwood, Mon.
" 23	Tenterden, Kent—Materials, &c.	Town Council	W. L. C. Turner, Borough Surveyor, Town Hall, Tenterden.
" 23	Luton—Paving, &c.	Urban District Council	Borough Surveyor, Town Hall, Luton.
" 25	Uxbridge—Granite	Urban District Council	W. T. Harvey, 61 High Street, Uxbridge.
SANITARY:			
April 14	Leicester—Sewers	Highway & Sewerage Committee	E. G. Mawbey, Borough Surveyor, Town Hall, Leicester.
" 14	Esholt, Yorks—Sewers	Rural District Council	H. A. Johnson, 15 The Exchange, Bradford.
" 16	Whitchurch, Hants—Additions to Drainage	Glendale R.D.C.	W. I. Taylor, County Surveyor, The Castle, Winchester.
" 20	Wooler, Northumberland—Sewerage Works	Corporation	H. W. Taylor, Engr., St. Nicholas's Chambers, Newcastle-on-Tyne.
" 28	Bexhill, Sussex—Sewer	Urban District Council	G. Ball, Borough Surveyor, Town Hall, Bexhill.
" 30	Bollington, near Macclesfield—Sewerage Works	Urban District Council	W. H. Radford, Engineer, Albion Chambers, King St., Nottingham.
TIMBER:			
April 18	Dundalk, Ireland—Sleepers Blocks	Gt. Northern Rly. Co. (Ireland)	T. Morrison, Secretary, Amiens Street Terminus, Dublin.
" 18	London, W.—Wood-paving Blocks	St. Marylebone Borough Council	J. P. Waddington, Boro' Surveyor, Town Hall, Marylebone Lane, W.
" 18	Coventry—Timber and Joiners' Work	Central South African Railways	F. W. Stevenson, Engineer, Gas Works, Coventry.
" 21	South Africa—Hardwood Sleepers	North Eastern Railway Co.	Crown Agents for the Colonies, Whitehall Gardens, S.W.
" 23	York—Sleepers		E. H. Clark, Stores Superintendent, Gateshead.

List of Competitions Open.

DATE OF DELIVERY.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	DEPOSIT REQUIRED FOR CONDITIONS, &c.	BY WHOM ADVERTISED.
April 23	Llandilo, Wales—Drainage Scheme	£100, £50, £25.	£1 is.	E. Jones, Glancennan, Llandilo.
" 30	Newcastle-upon-Tyne—Grammar School	£25, £15, £10.	£1 is.	H. J. Criddle, 2 Collingwood Street, Newcastle-upon-Tyne.
May 9	Barnet—Hospital	£10		C. D. Byfield, 16 High Street, Barnet.
" 31	Stamford, Lincs—Public Library			C. Atter, Town Clerk, Town Hall, Stamford.
" 31	New Somerby, Grantham—Church			Rev. H. H. Surgy, Dudley Road, Grantham.

New Companies.

BARTLETT, SCOTT & CO., LTD, timber merchants, &c., High Wycombe, Bucks. Capital: £5,000 in £1 shares.
 BEACON HILL BRICK CO. (NEWARK), LTD., Beaumont Cross, Newark-on-Trent. Capital: £2,000 in £1 shares.
 SANDERSON & ROBINSON, LTD., stone merchants, builders, Sheepbridge Lane, Mansfield. Capital: £30,000 in £1 shares.
 ALLEN & MANNOCK, LTD., architects, decorators, &c., 128, Mount Street, London, W. Capital: £12,000 in 11,000 shares of £1 each and 20 shares of £50 each.
 S. MARSHALL & SONS, LTD, builders, contractors, &c., Southowram, near Halifax. Capital: £12,000 in £1 shares.

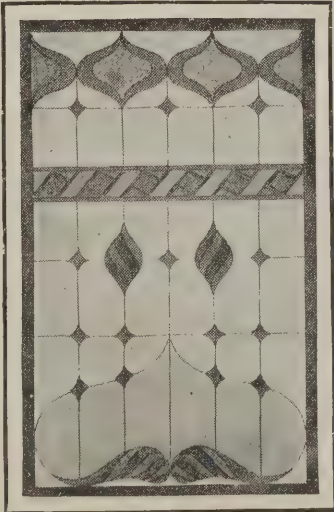
Bankruptcies.

[Abbreviations: R.O.—receiving order; P.E.—public examination; C.C.—county court; O.R.—official receiver; Adj.—Adjudication.]
 DURING THE WEEK ending April 8th eleven failures in the building and timber trades in England and Wales were gazetted.
 W. CORNEY, builder, Hanwell. Adj. March 28th.
 W. POWELL, builder, St Helens. Adj. March 30th.
 J. REES, builder, Merthyr Tydfil. R.O. March 29th.
 S. PARMENTER, builder, Brentwood (formerly of Braintree). Liabilities £4,128; assets £1,148.
 BELL & MAHER, builders, Prescott and St. Helen's. Liabilities £1,348; assets £400.
 W. DUDLEY, builder, Prittlewell, Essex. R.O. March 28th.
 J. SUMMERFIELD, road and sewer contractor, West-cliffe-on-Sea. R.O. March 26th.
 G. ANDERSON, plumber and painter, Manchester. P.E., Manchester C.C., April 25th, at 10.
 C. E. HOWORTH, builder and contractor, Brkdale. R.O. March 30th.

C. S. JENKS, builder and decorator, East Grinstead. R.O. March 28th.
 H. C. HUMPHREY, timber and slate merchant, Birmingham. R.O. March 29th.
 W. TYLER, painter, Trearlaw. First meeting, 135, High Street, Merthyr Tydfil, April 15th, at 3. P.E., Pontypridd C.C., May 10th, at 11.15.
 H. ROSSITER, builder, Clifton, Bristol. Failure in 1897. Dividend of 2d. in the £ paid on £1,263 unsecured liabilities.

H. KEMP, builder, Hull. First meeting, O.R.'s, Hull, April 13th, at 11. P.E., Hull C.C., April 25th, at 2.
 W. L. LE MAITRE, civil engineer and surveyor, Leeds. R.O. March 31st.
 G. P. BAGULEY, plumber, Ilkeston. First meeting, O.R.'s, Derby, April 13th, at 11. P.E., Derby C.C., April 19th, at 11.
 W. TURNBULL, builder, Horley. First meeting, 24, Railway Approach, London Bridge, April 14th, at 11.30. P.E., Croydon C.C. April 20th, at 11.

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ARCHITECT and SURVEYOR'S Assistant desires engagement. Nine years' varied experience in good office, competent draughtsman, designer and quantity surveyor. Moderate salary—temporary or permanent.—BETA, 73, Queen's Walk, Nottingham. 320

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ARCHITECT'S ASSISTANT desires engagement. Tracings, photo copies, and drawing. Evening work accepted.—G. QUINLAN, 19, Forthbridge Road, Clapham Common, S.W. 281

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ARCHITECT'S JUNIOR ASSISTANT (19), 5½ yrs. experience, good draughtsman, general experience.—R. P., 79, Woodville Road, Cathays, Cardiff. 299

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The April Issue of

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ARCHITECTURAL REVIEW

Contains the first part of an article on No. 10, Downing Street (The Treasury) by the Rev. W. J. Loftie. The article is profusely illustrated by photographs. Among other highly interesting features are the concluding article on The Hospital of St. Cross, by Basil Champneys; English Mediæval Figure Sculpture by Edward S. Prior and Arthur Gardner; and fifteen pages, devoted to Current Architecture, contain illustrations of work by Edward S. Prior, Bedford and Kitson, W. Dunn and R. Watson, and Edward P. Warren.

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R. W. EDWARDS,
Secretary.

Gas and Water Offices, Aldershot,
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By order,
ALFRED GILL, Town Clerk.

Town Hall, Birkenhead,
24th March, 1904.

(Continued on page xix.)

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- 316.—ARCHITECT AND SURVEYOR, age 33, with small practice, requires sit., view to amalgamation.
- 317.—DRAUGHTSMAN AND GENERAL CLERK, age 20, two yrs. architectural ex., small s.
- 318.—ARCHITECT'S ASSISTANT, age 23, six yrs. Scotch and English ex., details, spec., surveys, levelling, competitions, &c., mod. s.
- 319.—ARCHITECT'S ASSISTANT, age 24, 5½ yrs. ex., sal. 30s., surveying, levelling, wkg. and detail drawings.
- 320.—ARCHITECT AND SURVEYOR'S ASSISTANT, 9 yrs. varied ex., designer and quantity surveyor, mod. s.
- 321.—ARCHITECT'S ASSISTANT, age 21, 5 yrs. ex. details, surveys, and levelling.
- 323.—ARCHITECT AND SURVEYOR'S ASSISTANT, 4 yrs. ex., London preferred.
- 324.—CLERK of WORKS, age 35, experienced, and practical, good draughtsman, quantities, good refs.
- 325.—ARCHITECT'S JUNIOR ASSISTANT, neat draughtsman, &c., surveying and levelling, quantities, excellent refs.
- 326.—CARPENTER AND JOINER, practical experience, excellent qualifications and refs., wants job as foreman or clerk of works.
- 327.—ARCHITECT AND SURVEYOR'S JUNIOR ASSISTANT, articulated to F.R.I.B.A., draughtsman, good refs.

See p. xxii for the Employment Register.

**5 O'CLOCK P.M. MONDAY IS THE LATEST TIME FOR RECEIVING "WANT" ADVERTISEMENTS.
OFFICE: 6, GREAT NEW STREET, FETTER LANE, E.C.**

Tenders.

Information from accredited sources should be sent to "The Editor" at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Addressed postcards on which lists of tenders may be stated will be sent post free on application to the Manager, BUILDERS' JOURNAL, 6, Great New Street, Fetter Lane, E.C.

Cambridge.—For Cape Town Exhibition Stand, for Messrs. S. Chivers & Sons, Ltd. Messrs. George Baines, F.R.I.B.A., & R. Palmer Baines, architects, 5, Clement's Inn, Strand, London, W.C.:—

Kerridge & Shaw... £297
W. Saint, Devonshire Road, Cambridge... 257
* Accepted.

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Terra Cotta Works, CLEETHORPES.

Cardiff.—For additions and alterations to the Wilts and Dorset Bank, Newport Road, Cardiff Mr. E. H. Bruton, architect, 119, Queen Street, Cardiff. Quantities by architect:—

D. Davies	£3,550	0	0	£25	0	0
C. Beames & Nephew	3,320	0	0	20	0	0
S. Shepton & Son	3,289	0	0	53	0	0
G. Hallett	3,205	0	0	—	—	—
S. Andrews & Son	3,064	10	6	50	0	0
F. Bond	2,980	0	0	—	—	—
Latley & Co.	2,887	19	4	40	0	0
G. Burgess	2,860	11	0	55	0	0
Gough Brothers	2,850	0	0	—	—	—
J. E. Williams	2,820	0	0	15	0	0
S. J. T. Grinter	2,797	0	0	—	—	—
W. J. Morgan	2,790	0	0	—	—	—
J. Allan & Son	2,750	13	0	100	13	0
A. W. Cadwallader	2,737	3	8	7	3	8
W. Thomas & Co.	2,706	0	0	20	0	0
E. Turner & Sons	2,593	0	0	—	—	—

A, Allowance for old materials. [All of Cardiff.]
* Accepted.

Crowle (Lines).—For pulling down existing Wesleyan chapel and erecting new chapel, vestries, &c., at Crowle, Lincolnshire. Mr. T. Brownlow Thompson, architect, 15, Parliament Street Hull. Quantities by architect:—

Bourn & Wilkinson, Scunthorpe	£3,793	0	4
A. E. Pearce, Thorne	2,991	19	6
W. Clarke & Son, Crowle	2,784	12	0
A. J. Elmes, Gainsborough	2,745	4	9
T. Wood, Bridlington	2,691	8	0
Bowman & Son, Hull	2,665	0	0

Nechells, Birmingham.—For the construction of electric-power transmission scheme buildings, for the Birmingham, Tame and Rea District Drainage Board and the Birmingham Corporation:—

Buildings.	Furnace chimney.	Total.
J. A. Meredith, Cradley	£19,819 5 8	£21,290 17 1
Wilkins & Sons, Bristol	18,746 0 0	20,191 0 0
E. Garfield, Birmingham	18,210 0 0	19,840 0 0
G. Jackson, Oldbury	17,635 10 3	19,154 7 7
W. Wistance, Walsall	17,433 0 0	18,919 0 0
C. Bryant, Birmingham	17,001 0 0	18,497 0 0
Costain & Sons, Liverpool	17,122 0 0	18,374 0 0
Whitehouse & Sons, Birmingham	16,501 0 0	17,957 0 0
G. Webb, Birmingham	16,6 0 0	17,861 0 0
J. Langley, Birmingham	16,195 3 8	17,682 1 9
W. H. James, Sutton Clifford	15,839 0 0	17,274 0 0
W. & J. Webb, Birmingham	15,733 0 0	17,158 0 0
W. Hopkins, Birmingham	15,400 0 0	16,834 0 0
Haycock & Sons, Leicester	15,361 0 0	16,851 0 0
H. Dorset, Cradley	15,103 19 9	16,353 19 9
Lowe & Sons, Burton	14,887 0 0	16,110 0 0
Barnsley & Sons, Birmingham	14,886 0 0	16,081 0 0
Hodson & Sons, Nottingham	14,9 6 19 9	16,043 19 2
Dallow & Sons, Birmingham	14,850 0 0	15,875 0 0
T. Johnson, Birmingham	14,409 0 0	15,656 0 0
Lee & Sons, Birmingham	14,466 0 0	15,615 0 0
Alphons Custodis Co.	1,297 0 0	—
Universal Engineering Co., Nottingham	1,057 0 0	—

* Accepted for buildings and chimney.

[Continued on p. xx.

BAYLISS, JONES & BAYLISS, LTD

WOLVERHAMPTON.

LONDON SHOW ROOMS:—

139 & 141 CANNON ST. E.C.

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38 & 39, PARLIAMENT STREET, WESTMINSTER, S.W.

Concrete, Mosaic, and Wood Block Paving Specialists.

(See displayed Advt. in issue for March 23, p. vii.)

Awarded First Prize Medal, Adelaide Jubilee Exhibition, 1887, and Sydney Centenary Exhibition, 1893.

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When writing to Advertisers please mention The Builders' Journal.

Property & Land Sales.

The charge for Advertisements under this heading is 2s. per insertion not exceeding four lines, and 6d. per line after.

MUSWELL HILL.—52 Plots of exceedingly valuable FREEHOLD BUILDING LAND in Alexandra Park Road and Queen's Road; well-placed on high ground, close to Alexandra Palace, and near Muswell Hill Station, on the G.N.R. For SALE by AUCTION on behalf of

THE BRITISH LAND CO., LTD., at the "GREEN MAN," Muswell Hill, N., on THURSDAY, APRIL 21st, at SIX or SEVEN o'clock. Free conveyances. Possession on payment of 10 per cent. deposit; balance by easy instalments if desired.—Particulars, plan, and conditions of sale may be obtained at the place of sale, and of the SECRETARY, 23, Moorgate Street, E.C.

To Contractors, Builders, Machinists, Brickmakers, and Others.

NEW BILTON, RUGBY.
JAMES STYLES has been favoured with instructions from Messrs. Foster & Dicksee, Contractors, of Rugby, to SELL by AUCTION, on THURSDAY and FRIDAY, APRIL 28th and 29th, 1904, on the site of the Brickyard, New Bilton, valuable CONTRACTORS' PLANT. Eight capital portable engines, Worthington's sinking pump, and well tackle, compound vertical engine, gas engines, builders' machinery, brick-making machinery and plant, 1,400 galvanised roof sheets, and numerous other effects. Catalogues now ready, and can be obtained at the AUCTIONEER'S Offices, 36, Sheep Street, Rugby.

Interesting to every Builder.

POLING BOARDS, selected lengths and thicknesses (best quality and full measure).

Also Scaffold Boards, Putlogs, Scantlings, Deals, Battens, and Boards. Lowest wharf prices.

C. H. GLOVER & Co., Ltd., Importers, Hatcham Saw Mills, Old Kent Road, S.E.

YORKSHIRE STONE.

Any kind supplied in the rough, sawn, or dressed ready for fixing.

WM. KNOWLES, 7, Hamworth Rd., KEIGHLEY.

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Stocks of VELINHELI and BANGOR on hand.

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A large Stock of best Red Facings, Light, Medium, and Dark. Red Sand Faced. Also Stock of 100 Patterns Moulded Goods of all descriptions, including CHIMNEY POTS, RIDGE TILES, FLOOR TILES. Architects' own Designs to Order on shortest notice.

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For Mullions, Sills, Heads, Quoins, Jambs, Fenders, &c.

Buttermere Green Slate and Stone Works, KESWICK.

Contracts Open.

(Continued from page xvii.)

COUNTY COUNCIL OF MIDDLESEX. TO CONTRACTORS.

The Highways Committee of the above Council invite TENDERS for the ERECTION of a NEW BRIDGE in STONE, BRICK, and STEEL at Stanwell Mill, Stanwell, in the County of Middlesex.

Plans and specifications may be seen and quantities obtained at my offices on payment of two guineas, which will be returned on the receipt of a bonâ-fide Tender.

Sealed Tenders, endorsed "Stanwell Moor Bridge," to be sent to Sir RICHARD NICHOLSON, Middlesex Guildhall, Westminster, S.W., on or before 25th APRIL, 1904.

The lowest or any Tender will not necessarily be accepted.

By Order,
HENRY T. WAKELAM, M.Inst.C.E.
Middlesex Guildhall, County Engineer.
24th March, 1904.

BOROUGH of HAMMERSMITH.

TO PAVING CONTRACTORS.

The Council invites TENDERS for FLAGGING the FOOTPATH in a portion of Wood Lane, with either "indurated" or "impervious" patent composite stone.

Copy of the specification and form of Tender may be obtained on application to Mr. H. MAIR, M.I.C.E., Borough Surveyor.

Sealed Tenders, endorsed "Tender for Paving," must be delivered to me not later than SIX p.m. on WEDNESDAY, 20th APRIL 1904.

The Council does not bind itself to accept the lowest or any Tender.

H. THOMPSON,
Town Clerk.
Town Hall, Broadway, Hammersmith,
4th April, 1904.

STATIONERY AND ACCOUNT BOOKS.

Specially suitable for Architects, Surveyors, and Builders. Books for Time and Wages, Contracts, Materials, Ledgers, Journals, Cash and Day Books, Architect's Survey and Dimension Books, Certificate Books, Levelling Books, Specification and Quantity Papers, Tracing Papers, Tracing Cloths, Drawing Papers. Lists Free.

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Theobald's Road, London.

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Postal Address, { Quarry Owners & Stone Merchants.
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FIRST PRIZE BRICK MOULDING MACHINES

With PUGMILL Combined.

Suitable for any clay that can be made into bricks. They are in use in all parts of the world. Up-to-date improvements.

No. 1. Horse power, £50; with steam gearing, £60.

No. 2. Horse power, £75; with steam gearing, £90.

No. 3. Self-acting machine, will mould best sand-faced bricks better and cheaper, and with less power and less labour, than any other machine in the world.

It is also adapted for moulding clamp bricks with ashes mixed with the clay, and can be worked with only

TWO MEN AND TWO BOYS.

One man to wheel the clay to the machine.

One boy to load the bricks on the wheelbarrows.

One boy to wheel the bricks off to the hacks or drying ground.

One man to set the bricks off on the hacks.

Will make any number of bricks required up to 800 per hour, there being no moulder nor "walk-flatter" required.

Price, Steam power, £130.

No. 4. Self-acting machine is for moulding Fire Bricks, moulding them in water in the same way as for hand moulding, and will also mould any kind of clay in water. The machine can be driven at any speed up to 900 bricks per hour.

Price, Steam power, £130.

The clay is worked the same stiffness as for hand moulding in all the machines.

For further particulars, address

P. BAWDEN, 5, Cedar Road, Tottenham, London, N.

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White line on blue ground, and dark line on white ground.

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Manchester Show Rooms:

37, Cross Street.

Glasgow Show Rooms:

96, Renfield Street.

TENDERS—cont. from p. xv.

Barnard Castle.—For painting and papering, colouring, &c., at Balder Grange, Cotherstone, Barnard Castle, for the Right Hon. Lewis Fry. F. Farrow, architect, 7, Market Place, Barnard Castle:—

C. Hedley,* Galgate.

J. Wrathall, Horse Market.

G. W. Jackson, Horse Market.

* Accepted.

[All of Barnard Castle.]

Lichfield (Staffs).—For the erection of fourteen workmen's dwellings (under the Housing of the Working Classes Act) in Upper St. John Street, Lichfield, for the Sanitary Committee. Mr Emerson Brooke, city surveyor:—

L. & R. Barton, Hednesford .. £4,170 0 0

T. Elvins, Birmingham .. 4,075 0 0

H. Smith & Sons, Lichfield .. 3,850 0 0

W. Skelborne, Stafford .. 3,650 0 0

H. Gough, Wolverhampton .. 3,550 0 0

R. Harris, Sheffield, Walsall .. 3,373 0 0

D. Roberts, Handsworth .. 3,350 0 0

W. H. James, Sutton Coldfield .. 3,300 0 0

J. R. Deacon,* Lichfield .. 3,258 9 0

W. Bagnall, Lichfield .. 1,960 0 0

* Accepted.

London, S.E.—For additions and alterations to business premises, Nos. 26 and 28, Kirkdale, Sydenham, for Messrs. Sydney Smith & Sons, Ltd. Mr. George Pratt, architect and surveyor, Railway Approach, Sydenham, S.E.:—

J. Pratt .. £1,025 0 0

S. R. Best .. 899 5 0

H. Coney & Co. .. 879 15 0

J. M. Stewart* .. 799 0 0

* Accepted.

London, N.—For the erection of a detached residence in Dollis Avenue, Church End, Finchley, N., for Mr. G. H. Ohlson. Messrs. Bennett & Richardson, architects, 2, The Broadway, Church End, Finchley, N.:—

C. F. Day .. £1,100

Shewry & Sons .. 1,025

C. W. Scott .. 1,010

J. Phoenix* .. 990

* Accepted.

London, S.E.—For the erection of a small warehouse on the site of 12, Lant Street and 2, Bittern Street, Southwark. Mr. G. A. Lansdown, architect, 9, Regent Street, Waterloo Place, S.W.:—

Joselyn & Young .. £2,570

Spiers & Son .. 2,387

G. Newton .. 2,350

W. Hooper .. 2,300

B. & A. Gale .. 2,299

S. Polden .. 2,256

B. E. Nightingale .. 2,222

Kirk & Kirk .. 2,177

Grout Brothers .. 2,167

Ford & Walton, Ltd. .. 2,165

W. O. Collingwood .. 2,124

Foster Brothers .. 2,124

H. Line .. 2,100

W. V. Goad .. £2,090

Sims & Wood .. 2,075

Johnson & Co. .. 2,073

R. Ward & Son .. 2,071

W. Downs .. 2,060

Hibberd Brothers, Ltd. .. 2,028

C. King .. 2,000

J. Parsons .. 1,993

T. G. Sharpington .. 1,980

C. R. Price .. 1,957

R. & E. Evans* .. 1,903

* Accepted.

Southampton.—For alterations to the Auction Mart, 17, Above Bar, for Messrs. Perkins & Sons. Mr. William Borough Hill, F.S.I., architect and surveyor, Southampton:—

H. Stevens & Co. .. £1,750

C. Barter .. 1,728

H. Cawte .. 1,710

J. J. Udall & Co. .. 1,696

Jenkins & Sons* .. 1,674

* Accepted. [All of Southampton.]

Southampton.—For erecting new business premises on the sites of 22, East Street and 27, Strand, Southampton, for Mr. J. Hollis. Messrs. Poole & Son, architects, 5, Portland Street, Southampton:—

Dyer & Sons .. £6,650

Cawte .. 6,149

Osman .. 5,990

Stevens & Co. .. 5,970

Playfair & Toole .. 5,794

Exors. of W. Franklin .. 5,790

Doggrell & Son .. 5,779

Bagshaw & Son .. 5,656

Jenkins & Sons .. 5,649

[All of Southampton.]

South Croydon, Surrey.—For house and fencing in the Blenheim Park Road, for Mr. A. J. Little, Harrow, Middlesex. Mr. Blunden Shadbolt, architect, Brighton Road, Horley, Surrey:—

H. Lumsden, 7, Gresham .. House. Fencing.

Road, South Norwood £684 0 0 £35 0 0

Comber Brothers, 21, Brig- .. stock Road, Thornton

Heath .. 666 15 0 24 10 0

J. R. Bex, Wyche Grove, .. South Croydon .. 640 0 0 30 0 0

H. Bacon, 63, Bensham .. Lane, Thornton Heath .. 567 0 0 32 0 0

W. Gowman,* Derby .. Grove, West Croydon .. 562 0 0 48 0 0

* Accepted subject to slight alterations.

Walthamstow.—For alterations and additions, Higham Hill infants' school, for the Walthamstow Education Committee. Mr. H. Prosser, architect:—

R. & E. Evans .. £2,278

A. G. Brand .. 2,215

Pollard & Brand .. 2,163

Sands, Palmer & Co. .. £2,050

J. & J. Dean* .. 1,769

* Accepted.

Building Trades' Exhibition in Sheffield.—

From April 15th to 23rd a building trades' exhibition will be held in the Drill Hall, Edmund Road, Sheffield. The organizers of the exhibition are Mr. C. D. Smith and Mr. J. W. Norman. Mr. Smith was the original promoter of the Wholesale Furnishing Trades' Exhibition, and managed every furnishing trades' exhibition and ironmongery trades' exhibition held at the Agricultural Hall up to June, 1903. Mr. Norman has been connected with the London Building Trades' Exhibition for twelve years.

Electric-Power Transmission on the Northern Railway of France.—The Northern Railway Co. of France are at present installing a transformer sub-station at the Amiens railway station. The direct current supplied by the power house is to be transformed here into single-phase alternating current, and transmitted over a distance of 5-k.m. to Longueau, where it will be utilized for the lighting of the railway station. The Amiens sub-station will contain two 35-k.w. Westinghouse rotary converters, which will be supplied with direct current at 125 volts and will give out single-phase current at 88 volts 50 periods. By means of a 30-k.w. Westinghouse transformer the alternating voltage will be raised to 3,500. This transformer is fitted with multiple contacts by means of which the number of secondary coils can be varied so that a constant pressure may be maintained at the consumption terminals. This will allow the primary voltage to vary 5 per cent. each way. At the Longueau railway station the pressure will be lowered to 115 volts by means of a 28-k.w. Westinghouse transformer. All the electrical plant is being supplied by the French Westinghouse Company.

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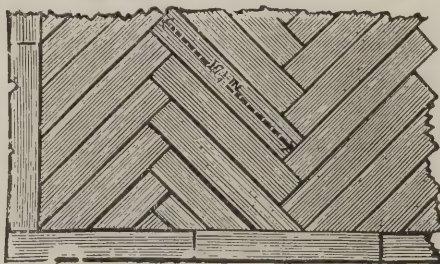
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17½ × 3 × 2	8 3	7 9	11 5
17½ × 3 × 1½	6 9	6 3	9 0



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THE BUILDERS' JOURNAL

AND ARCHITECTURAL RECORD.

April 20, 1904. Vol. 19, No. 480.

6, Great New Street, Fetter Lane, E.C.

Summary.

A reprint of Blondel's "L'Architecture Française" is being produced under the auspices of the French Ministry of Fine Arts. (Page 192.)

In a paper which he read before the R.I.B.A. on Monday Mr. E. S. Prior said the statues of Wells front had not been largely defaced, they had not perished, nor had they been restored: they belonged to that fresh period of Gothic art when its expression seemed to leap upward like a flame: and they were a production of English art, not, as much assertion had declared them to be, the work of any foreign sculptor. (Page 189.)

A considerable amount of co-operative building is being undertaken at Notting Hill, Leicester, Hull, Haslemere and Coventry. (Page 194.)

Mr. Kenneth Gray read a paper on heating and ventilating small workshops before the Junior Institution of Engineers in which he advocated the placing of ventilating outlet registers near the floor-level and the fresh-air inlets above head-level, some mechanical power being employed to drive the air into the shops. (Page 185.)

The annual report of the Liverpool Architectural Society makes reference to the deputation from the master-builders' association which waited on them in reference to the growing custom of specifying that builders must include in tenders a sum for attendance on work to be done by specialists. They stated that the architect was in a better position to do this. The Council agreed that this was reasonable, and they hope that members will see their way to follow the suggestion. (Page 193.)

A limited competition for the rebuilding of the City of London Lying-in Hospital in City Road has just been decided in favour of Mr. H. H. Collins, to whom the first premium of 100 guineas has been awarded. Mr. Rowland Plumbe, F.R.I.B.A., was the assessor. (Page 184.)

In concluding a paper on "The Genesis of the Christian Basilica" which he read last week at Sheffield Mr. Charles Hadfield referred to Westminster Cathedral, which he said was proving to be in every way worthy of the great churches of past ages. (Page 193.)

The architect for the new College of Science at Dublin will be Mr. Aston Webb, R.A., with whom Mr. T. M. Deane will be associated. (Page 194.)

The bricklayers at Bridgnorth have struck for an advance in wages, and the joiners at the Hartlepoons, Middlesbrough and Stockton have given notice of their intention to demand an increase from 9½d. to 10d. per hour. (Page 194.)

The ancient church of Borgund, Norway, dating from the eleventh century, was first robbed and then destroyed by fire last week. (Page 192.)

The Influence of the Allied Societies.

THE annual report of the Sheffield Society of Architects and Surveyors serves to show how the allied societies are gaining in influence, especially in regard to architectural competitions. Reference is made in this report to the competition in connection with the Sheffield Corporation's building scheme at Wincobank. This was carried out, but upon the facts being put before the assessor and the Council of the R.I.B.A., the assessor appointed refused to act, and the R.I.B.A. sent out a circular to its members and to members of the allied societies asking them not to compete. In consequence of this an assessor was appointed by the Sheffield City Council who was not a member of the R.I.B.A. nor of the allied societies, and the Corporation accepted a design which did not comply with their own building by-laws. The Society deeply regret the action of the Corporation in this matter, as by violating the established traditions of architectural practice they made it impossible for members of the R.I.B.A. or the allied societies to compete, and consequently the city lost the benefit of much valuable experience. The Society approached the Free Libraries Committee of the City Council, and suggested that the proposed library at Walkley should be thrown open to public competition. The conditions were discussed and in part amended, and although not quite so satisfactory as in the case of the Westbar fire-brigade station, they were on the whole acceptable. In another local, though limited, competition, one of their members was appointed assessor, and in a competition now pending another member has been similarly appointed. The position of the Society has also been recognized by the request of the Ilkley Urban District Council to their Council to advise them on the appointment of an assessor in their competition for new public buildings: so that it will be seen the Sheffield Society has acquired considerable influence within its own radius. This augurs well. The report makes reference to the question of registration. The Society passed a resolution "that the legal registration of architects is desirable, and that the R.I.B.A. be respectfully urged to prepare a practicable scheme." A conference was called by the R.I.B.A., and the Sheffield Society was represented by Mr. E. M. Gibbs. The work of the Committee is now in progress, but it will probably be some time before it can complete its labours. Another matter considered was the proposed University for Sheffield, the establishment of which would prove highly beneficial to the professional and educational progress of the city and district. The report further states that the Master-

Builders' Association have recently opened the question of the contract agreement form, and the matter is still under the consideration of the Council.

St. Mary Aldermanbury.

ONCE again the Bishop of London is mooting the demolition of one of Wren's City churches. This time it is St. Mary Aldermanbury. We are not informed yet what his reasons are—these will be given at the meeting of the parishioners which is to be held to-day—but we can form a pretty correct estimate of them; doubtless they differ little from those put forward so vainly in respect of All Hallows, Lombard Street. The gist of the matter, however, is this—here is a church rebuilt by Wren after the Great Fire; it has remained intact to this day; the Bishop of London proposes to pull it down and apply the proceeds derived from the sale of its site to the building of another church in the suburbs. We do not dispute that, from one point of view, there is some logic in the argument that funds should not be spent in maintaining a church which is now attended by only a handful of people, as no doubt is the case with many City churches, but our contemporary the "City Press" assures us that this is not the case with St. Mary Aldermanbury, which carries on an active religious work. Moreover, as we have pointed out before, these Wren churches are not like so many tin tabernacles; they are the work of one of our greatest architects; they have stood for more than two centuries, throughout which time they have been closely associated with the history of the great City of London; and they are national treasures, not mere parochial structures. If one more of them is demolished through the mistaken zeal of an ecclesiast, the whole question of the City churches will have to be raised and something done to assure their future. It is the easiest thing in the world to demolish them; but we can never replace them; once gone they are utterly lost, and we shall have nothing but the guide-book to recall their existence. Perhaps the Bishop of London will ask why St. Mary's and St. Clement Danes should be allowed to block up the Strand, and we shall have to grant him his brand-new suburban fanes in place of them; yet, even though the caretaker and his children were the only occupants of the pews, shall we not retain these Strand churches for the charm they give to every passer-by? How much in interest the Strand would lose if they were gone. And it is the same with the City churches. We trust the parishioners of St. Mary Aldermanbury will regard the matter in this light, and show their contempt for what is nothing less than gross vandalism on the part of the Bishop.

MISSISSIPPI STATE HOUSE.

THE illustrations of this building which we publish serve to show what extensive structures are undertaken by some of the American States. The arrangement of the several parts can be seen on reference to the plans given on p. 186. It will be noticed that the House of Representatives is on the first floor (or, as our American friends call it, the second—the ground floor being the first) at the west end of the building, and the Senate Chamber at the opposite end. A special feature is made of the rotunda in the centre (illustrated on this page). The building groups well together from many points of view and shows that its architect, Mr. Theodore C. Link, is an able planner and possesses a good feeling for proportion.

LONDON LYING-IN HOSPITAL COMPETITION.

A COMPETITION has just been held for the rebuilding of the City of London Lying-in Hospital at the corner of Old Street and City Road. The site is an awkward one, being very restricted and hemmed in; besides, there are ancient lights to consider, which adds to the difficulties. The following six architects have submitted designs in limited competition:—H. H. Collins, C. Reilly & Son, W. C. Marshall, T. W. Aldwinckle & Son, Cheston & Perkin and T. H. Smith. The first premium of 100 guineas has been awarded by Mr. Rowland Plumbe, the assessor, to Mr. H. H. Collins, the second (fifty guineas) to Messrs. C. Reilly & Son, and the third (twenty-five guineas) to Messrs. T. W. Aldwinckle & Son, bracketed with another competitor who also received twenty-five guineas; and twenty guineas each to the other two architects.

So far as the plan is concerned, and that of course is the chief thing, Mr. Collins's is undoubtedly the best, taking into account the proposed cost of the rebuilding—about £25,000; but as regards the elevation, it is lamentably weak and uninteresting. Quite the best elevation in the room is that marked 4, by Messrs. Cheston & Perkin. Mr. Collins sends an alternative design, with a bird's-eye perspective of it, but it is



MISSISSIPPI STATE HOUSE, JACKSON, U.S.A.: EAST END.

not so good as the selected one. This latter shows the main entrance towards City Road, leading into a hall with the matron's office on one side and the lift and stairs on the other, and the secretary's office beyond. Running right and left is a corridor 6ft. 3in. wide. At one end—that facing Old Street—are placed the board room (31ft. by 27ft.), a top-lighted waiting-room for out-patients (27ft. by 22ft. 6in.), the in-patients' department, and the entrance for midwives, service and trade, this last leading to the kitchen department at the back of the site, which is part of the existing building and will not be pulled down—in fact a new storey is being added to it, providing increased bedroom accommodation. At the opposite end of the corridor are the doctor's and medical officer's rooms, with a corridor leading to the chapel (27ft. by 31ft.). Opening out of the main

corridor, opposite the entrance hall, is a waiting-room 25ft. by 17ft., for which there would seem to be little need, considering that a large waiting-room is provided in the out-patients' department (in the latter, it may be mentioned, the usual hospital dispensary is absent, its place being taken by an office where the patients can be seen and arrangements made for their admission). On the first floor, over the waiting-room that opens out of the corridor, is a labour ward, with a baby washing-room close by, and at different corners of the site are four six-bed wards, each 27ft. by 31ft., isolated and cut off by cross-ventilated lobbies. The second floor is similar to the first, and the third is occupied by bedrooms for the nurses, with a two-bed isolation ward at one corner. The feature of this design is the treatment of the wards, which are kept well isolated and quiet; altogether fifty beds are provided.

Mr. Reilly's elevation is strongly treated, with brick pilasters running up the front. The plan is, roughly, like this $\gg\ll$, the out-patients' department being in one of the arms on the Old Street front and the in-patients' in the other, the wards being arranged in the same way on the upper floors, with a scullery kitchen between. The plan is interesting, but many of the rooms are most awkwardly shaped. Of the other designs, that by Messrs. Cheston & Perkin shows a 6ft. 9in. corridor right across the City Road front, with squarely-treated blocks at either end; the design is not so economical as Mr. Collins's, though, as we have already remarked, the elevations are admirable. Messrs. T. W. Aldwinckle & Son show a fairly good elevation and plan, Mr. Marshall a design of average merit, and Mr. T. H. Smith a rather muddled scheme which would be expensive to carry out. In our next issue we hope to publish the selected design.

King Edward VII. New Grammar School, King's Lynn.—The foundations of this building (of which Mr. Basil Champneys is the architect) are now practically complete up to damp-course level. They have been carried out by Mr. William Sindall, builder, of Cambridge. The superstructure is to cost about £37,000 and will be undertaken by Mr. J. Cracknell, builder, of Peterborough.



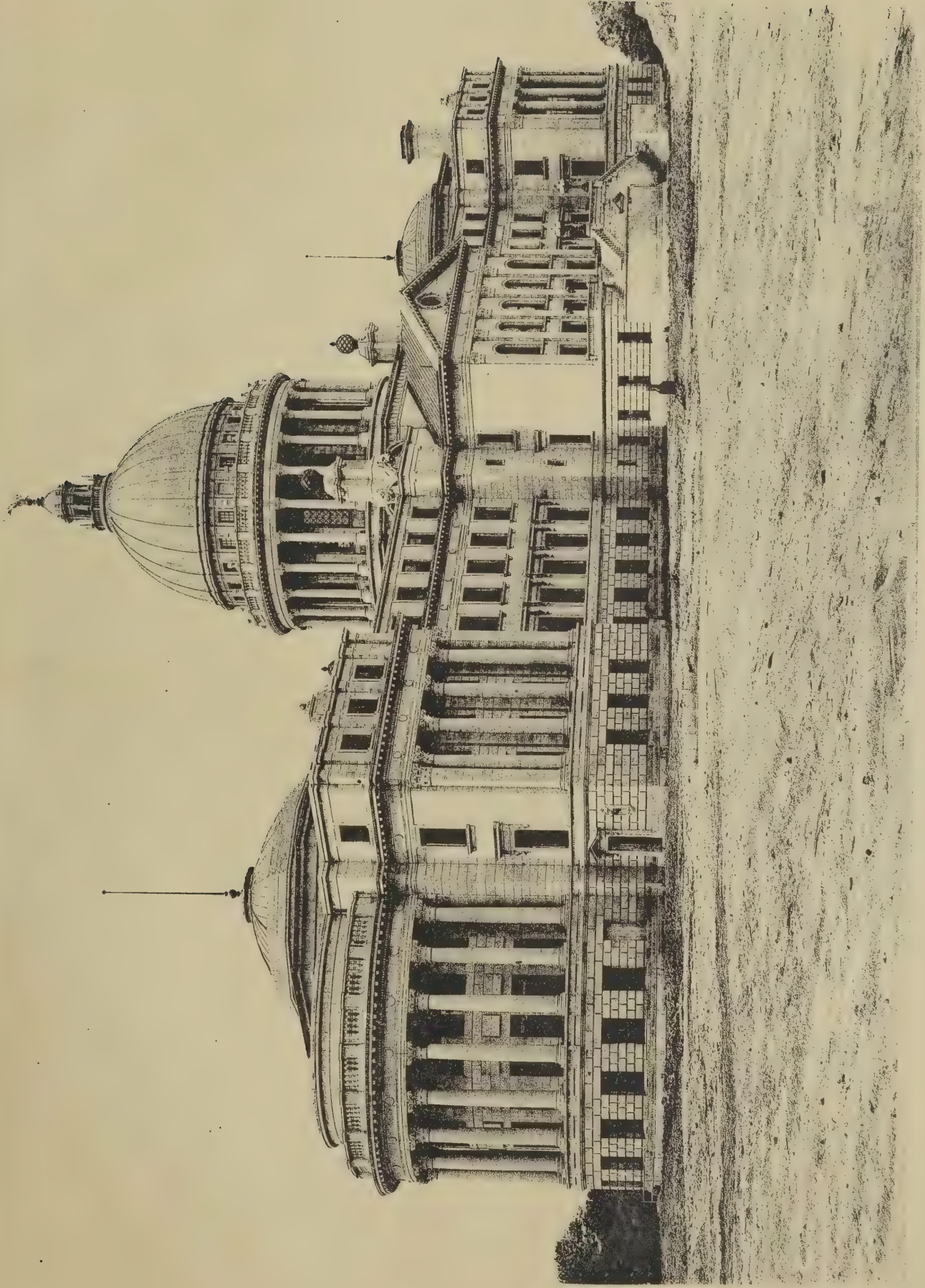
MISSISSIPPI STATE HOUSE, JACKSON, U.S.A.: THE ROTUNDA.

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Supplement to
THE BUILDERS' JOURNAL AND ARCHITECTURAL RECORD,
Wednesday, April 20th, 1904.



SOUTH FRONT.



NORTH FRONT.

THE NEW STATE CAPITOL AT JACKSON, MISSISSIPPI, U.S.A. THEODORE C. LINK, ARCHITECT.

SPOTTISWOODE & CO. LTD. LITH. LONDON.

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Views and Reviews.

Brickwork and Masonry.

The existing books on brickwork and masonry are not what they ought to be, we admit, and there is an opening for a good book on these branches of construction, but this book by Mr. Mitchell does not substantiate its claim to supply the want. The book does very little more than has been done before by the other works on the subject, and it is neither a comprehensive treatise nor a book for the elementary student alone that shall train him in the way he should go. In fact, it falls between two stools. It is mainly a re-hash of the author's books on building construction, most of the letterpress and illustrations being the same, and remembering that those books are not satisfactory it is only to be expected that this is the same. The book properly begins with the subject of foundations, dealing with excavating,

&c. The book finally winds up with some very meagre and often fallacious information on the composition, manufacture and strength of bricks, stones, cement, &c. The chemical and scientific treatment attempted is often laughable and always unenlightened. The book on the whole is too scholastic and impracticable, theory not being based on practical knowledge. Brickwork and masonry as applied in engineering construction are almost wholly ignored.

"Brickwork and Masonry: A practical text-book for students and those engaged in the design and execution of structures in brick and stone." By Charles F. Mitchell, assisted by George A. Mitchell. London: B. T. Batsford, 94, High Holborn, W.C., price 4s.

Aesthetics.

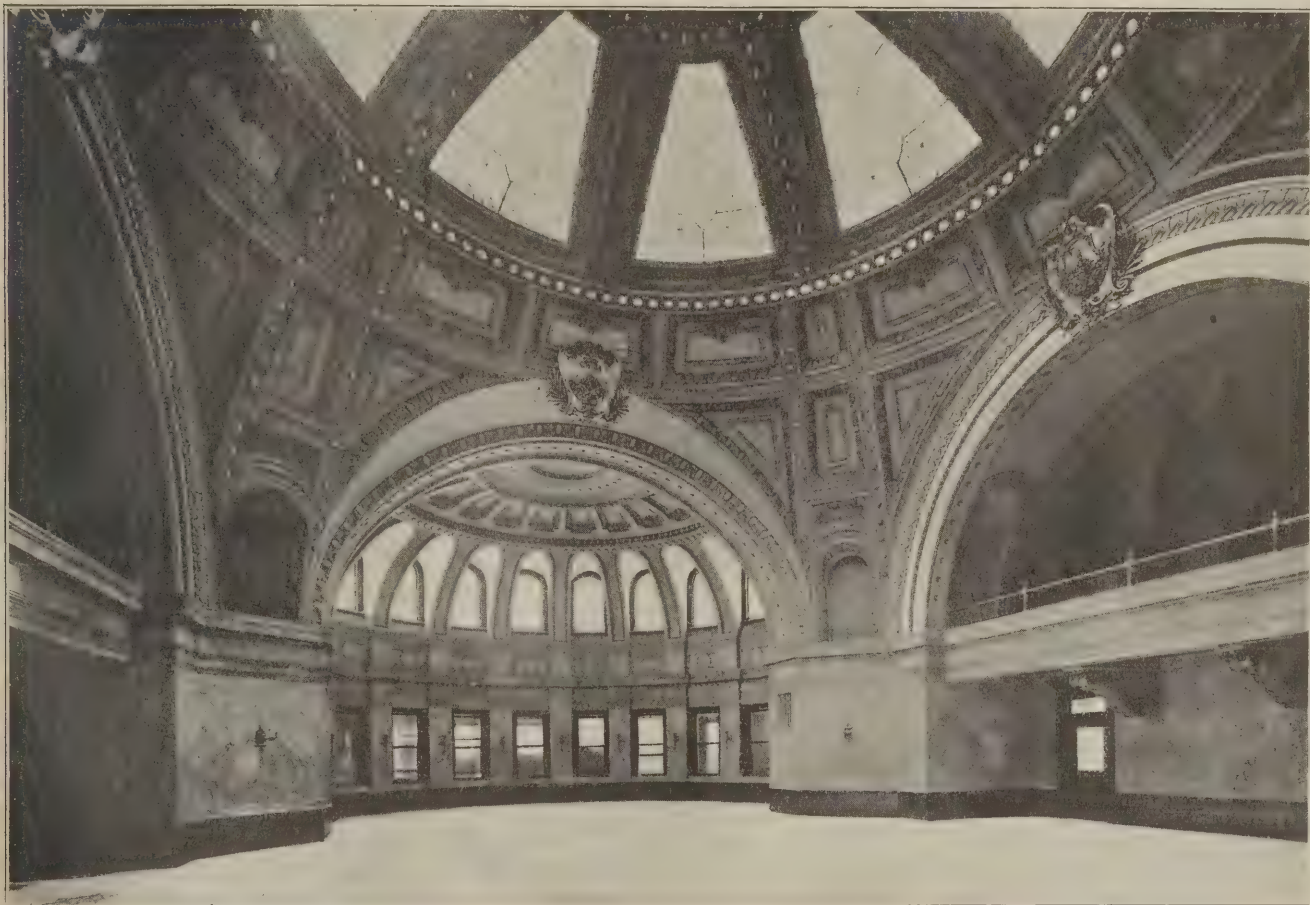
This little pamphlet is not a serious contribution to the philosophy of art. The author says "a discussion as to the meta-physical aspects of aesthetics would here be out of place"—but surely it is impossible to come to any conclusion worthy of considera-

of an idea, and as such is the product of its time and place, and that the qualities which seem common to every age, *i.e.*, the "standards," are the very fountain springs of human nature itself.

"Standards of Taste in Art." By E. S. P. Haynes (The Vigo Cabinet Series). London: Elkin Matthews, Vigo Street, price 1s. nett.

HEATING SMALL WORKSHOPS.

AT the meeting of the Junior Institution of Engineers held on April 8th a paper on "Heating and Ventilating Small Workshops" was read by Mr. Kenneth Gray, M.S.I. Employers of labour, he said, were beginning to pay attention to the ventilation and warming of their shops. Experience showed that, apart from the benefit which the employees derived from healthy and comfortable surroundings, a real economy



MISSISSIPPI STATE HOUSE, JACKSON, U.S.A.: THE HOUSE OF REPRESENTATIVES. THEODORE C. LINK, ARCHITECT.

concrete, piling, &c., though this subject is not treated as well as it should be. The chapters on brickwork, walls and arches are far too elementary, and not practical. There is almost no instruction to the bricklayer about setting-out and rubbing, centering, means of overcoming all the little practical difficulties, brickwork in iron skeleton structures and in half-timber work; and the bonding is too theoretical; circular work is not dealt with, nor the peculiar herring-bone and wavy garden walls built in some districts, by which methods strength is given instead of by buttresses, and brick pattern work is not dealt with. As for masonry, vaults, domes, stairs and arches are referred to in far too scrappy a fashion. The practical mason is almost wholly disregarded; he surely should be considered and given matter on the working of stone, machine and hand tools, the raising of stonework into position, centering, and all the time-honoured methods of building vaults and domes,

tion without surveying the whole field. Mr. Haynes wrongly imagines the hypothesis that "the aesthetic sense is closely connected with the utilitarian qualities developed by natural selection" to be new. He seeks to weaken the dictum that "all art is the natural product of its time and place," but the words are surely true of every form of energy. In the end Mr. Haynes comes to the conclusion that "the purpose and function of the artist are the satisfaction of the aesthetic faculty through and by means of aesthetic ideals" and that "man's conception of truth is, of course, purely relative to himself, and we need not assume that his ideals have any absolute value." He thinks that the function of the critic is "to detect the essential qualities of good art in fresh guise." But are these essential qualities the ideals; if so, and they have no absolute value, how can the critic use them? Mr. Haynes is too loose; the right view is surely that art is functional or the expression

was effected where a large quantity of fresh warmed air was continually passing through the shops. Investigations seemed to show that expired breath, although it tended to rise at the moment of leaving the lungs, was probably rapidly cooled, and being a heavier mixture than fresh air fell again almost at once. Under these circumstances, if the ventilating outlet registers were placed near the floor-level and the fresh-air inlets above head-level, and some mechanical power were used to drive the air into the shops, a continual stream of fresh air would be passing into the building, while the expired vitiated air was safely carried away through the extraction shafts. With all systems of ventilation it was necessary to provide means to warm the incoming air, and it seemed advisable to do this while it was passing through the main duct leading to the shops. But it was a good plan not to heat the air to a high temperature; there were many reasons why it was advisable to heat it only

more extensive and better detailed. If so situated that he could not study a more suitable building, a student would be well advised to measure Cowdray House banqueting hall for the sake of what he could learn by doing so, and the finished drawings might well be utilized for submission for the R.I.B.A. final examination as testimonies of study, or if well drawn, might form one of a series of sheets submitted for the Pugin Studentship; but they would be unlikely to win the measured drawings silver medal.

G. A. T. M.

Reigate Municipal Buildings.

ILKLEY.—C. T. W. writes: "With reference to an enquiry by 'Arun' in your issue for April 13th, drawings and particulars of Reigate Municipal Buildings were published in 'Building World' for March 22nd, 29th and April 5th, 1902."

Architects under Government.

READING writes: "I am desirous of obtaining full particulars as to the employment of architects under Government. (1) Where can I obtain these; also where can I get some papers set at the recent examinations? (2) Do assistants on the temporary staff have any advantage over assistants not on the staff?"

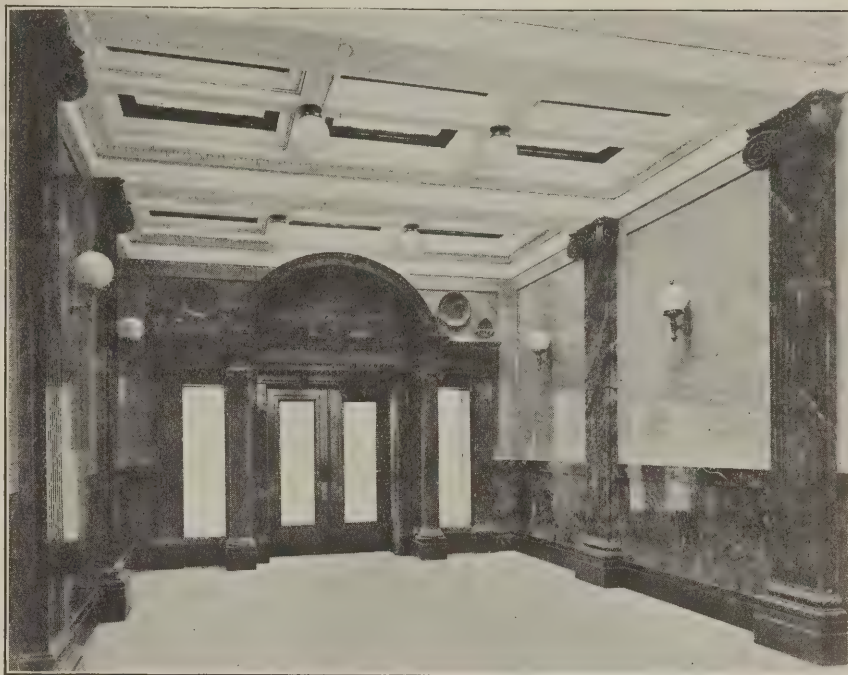
(1) Particulars of all the appointments which are thrown open to general competition are obtainable from the secretary, Civil Service Commission, Burlington House, W. The best of these appointments are of an engineering nature, though men who have had training in an architect's office are allowed to compete, while others are mainly concerned with quantity surveying. The examinations most frequently held are those for assistant civil engineers and for assistant surveyors in the Admiralty, and for assistant examiners (of builders' accounts, it may be said) in the Office of Works. Recent examination papers are published by Messrs. Eyre & Spottiswoode, East Harding Street, E.C. (2) The only appointments which are wholly or largely architectural are those of assistant surveyors in the Office of Works; and these are made as the result of examination of nominated candidates, nominations being very rarely given to any but members of the "temporary" staff. In the preliminary weeding-out process in other departments there is also the likelihood that the qualifications of temporary assistants are better known to those who have to decide than are the qualifications of others who apply from outside, while sometimes if a man whose competency is known is placed at the head of the unsuccessful list he may be offered a post; but the examination itself is managed with absolute impartiality.

G. A. T. M.

The Old Lamp Standards on Waterloo Bridge.

A COUNTRY ARCHITECT writes: "I see that the old gas standards on Waterloo Bridge have been all removed at last. I remember that when some of them were taken away there was an outcry in the profession, but I have heard no grumbings against this concluding piece of vandalism. With these and the disappearance of Stevens's railing around the British Museum, the most perfect designs in cast-iron work in London have disappeared. Can you tell me the name of the contractor who removed the lamp standards, or where I could obtain one, or even a photograph of one?"

The standards were removed by the London County Council, who, we understand, have not yet decided what they intend to do with them, though it is probable they will keep them for other purposes. A photographic illustration of one of the standards appeared several weeks ago in the "Daily Graphic." With regard to the British Museum railings it is interesting to note that Mr. H. Percy



MISSISSIPPI STATE HOUSE: CORRIDOR, FIRST FLOOR.

Adams has reproduced Alfred Stevens's delightful little lion on the railings around the Law Society's new wing in Chancery Lane.

Preservative used on Cleopatra's Needle.

TEDBERGH.—E. D. D. writes: "What is the name of the composition used for preserving Cleopatra's Needle, and the name of the maker?"

Browning's Colourless Preservative Solution, made by The Indestructible Paint Co., Ltd., of 31, Cannon Street, London, E.C.

Lutterworth Church.

RUGBY.—METEOR writes: "Has the parish church at Lutterworth, Leicester, any special architectural merit, and would it be suitable to measure wholly or in part for the R.I.B.A. intermediate examination? Does it lessen the architectural value of measured drawings if they are coloured to represent the actual tints of the several materials?"

St. Mary's Church, Lutterworth, Leicestershire, was restored in 1869. It is a good Decorated edifice with some Early English and Perpendicular features, with a good lofty tower. It contains various relics of John Wyclif, who was parish priest here from 1374 to 1384, among them being a very fine Early Perpendicular pulpit carved in oak, part of a cope, and a portrait of the Reformer. A very interesting wall painting of the Resurrection was discovered when the church was restored. The architectural value of measured drawings is in no way lessened by colouring them as suggested, so long as it is really well done and no attempt made to produce a picture instead of a technical drawing.

M.

Vernier Scale on Theodolite.

LONDON, S.E.—SUBSCRIBER writes: "How is a vernier scale on a theodolite divided up so as to read seconds as well as minutes?"

Only very large and unwieldy theodolites



MISSISSIPPI STATE HOUSE: GOVERNOR'S ROOM.

have the vernier scale divided up into less than single minutes of arc, which is quite enough for all ordinary purposes. If, however, the vernier be divided into seconds, it will be done in a similar fashion to the minutes on an ordinary theodolite, the main scale being then divided much more closely than usual.

G. A. T. M.

Stability of Brick and Stone Piers.

SUBSCRIBER writes: "Which is the most practical method of calculating the stability of various brick and stone piers at side walls to receive the several forms of wooden trusses met with in the course of practice, with slate and also tile roofing?"

It is not usual to calculate the piers built out from a wall to receive the ends of roof-trusses, and there is no method by which any reliable calculation could be made without starting with certain assumptions which would be matters of opinion. It would seem reasonable to assume that the pier takes the whole load, and the wall from which it projects

"conditions of sale" and possibly "building regulations" which (being laid down by the original owner of the land) must be observed. If this is not so, each proprietor is liable for the half of each street to which his property has frontages; thus A in the main street is liable for a half share calculated upon a 54ft. frontage, and similarly for the side street upon a frontage of 28ft. 6in. The usual plan is for the vendor's surveyor (or the local sanitary authority) to make up the whole street and apportion all the cost among the various owners *pro rata*. F. S. I.

An Unusual Measuring Rod.

SHEFFIELD.—PUZZLED writes: "I recently obtained at an auction sale an old 6ft. long measuring rod with another length sliding in a groove at the back, so as to make together when the back slip is pulled out a rod 12ft. long. Instead, however, of being divided up to 6ft. on one side, and down from 12ft. to 6ft. on the back, which would allow the end of the slip to give a correct reading

So far as I can ascertain no drawings have been published, but it is impossible to be certain upon such a point.

M.

Right of Light: Hedge dividing Properties Drawings to Measure for R.I.B.A.

BIRMINGHAM.—ARCHITECTUS writes: "(1) The accompanying sketch (not reproduced) illustrates some old property and also property about to be erected. The latter is set back about 20ft., and will come some distance past the old work. Can the owners of the old property claim a right of light? (2) In the case of a hedge dividing two parcels of land, where one has rights to claim the hedge can one claim any distance from it on the other owner's side? (3) Would Holy Trinity Church at Matlock Bath be suitable to measure up for the R.I.B.A. final examination, or would the town hall at Abingdon be better? Could I measure up the latter during a holiday of two weeks?"

(1) To build as proposed would be a distinct infringement of the right of light possessed



MISSISSIPPI STATE HOUSE, JACKSON, U.S.A.: THE SENATE CHAMBER. THEODORE C. LINK, ARCHITECT.

prevents it from bending, so that the calculation would be made as for a short pier, *i.e.*, one not more than six diameters high. If the thickness of the wall is taken as part of the pier, then the latter should be calculated as if detached and an allowance made as follows:— w = safe load on short pier, r = ratio of height to least thickness. Then safe load on given pier = $w \frac{(24 - r)}{18}$

HENRY ADAMS.

Liability for Cost of Roadway.

LEAMINGTON-ON-TYNE.—R. W. writes: "Referring to the accompanying plan (not reproduced), is A liable to pay for part of the crossing *c*? Please state what parts of the road he is liable for. Is B liable for part of the crossing?"

Your question is not very clearly put, but I gather that the sketch plan refers to portions of a building estate which has been cut up into various plots. This being the case, in all probability there are special

on the back, the front divisions stop at 5ft. 9in. (that is, 3in. from the end of the rod) and on the back the divisions start again at 5ft. 9in. at the end of the rod and go down to 10ft., thus giving a shortage of 3in. in the readings. The back slip is not divided. Is there any particular reason for this arrangement, or any method of adjusting the slip to give correct readings, without of course altering it, or has it been some inexplicable fad?"

I have never seen such a rod and can give no explanation. Had it been made as suggested by you it would have been easy to use and possibly useful in some cases, such as measuring up dilapidations. In its present form it seems only capable of being used by working it hand over hand without the back slip.

HENRY ADAMS.

St. Leonard's Church, Manchester.

ROCHDALE.—DRAUGHTSMAN writes: "I should be very glad if you would inform me whether any drawing has ever been published of the south doorway of St. Leonard's Church, Middleton, near Manchester."

by the owner of the old property and his windows, marked A. (2) If there be no ditch, or if there be ditches on both sides, it is customary to consider the boundary line as lying in the middle of the hedge; but if the property in the hedge is unquestionable, the boundary line lies 5ft. beyond its centre, the assumption being that it was planted sufficiently far within the owner's property to allow its being trimmed from the outside without trespass. This space is generally occupied by a ditch. It must be borne in mind, however, that these are general rules, only applicable when the exact boundary cannot be substantiated by deed plans or other reliable evidence. (3) The town hall at Abingdon would be the better, and ought not to occupy so long as a fortnight to measure. It is a larger subject than is usually measured for the purpose, and part only would suffice, unless it is intended to also submit the work for the R.I.B.A. "measured drawings" prize; in that case the whole building should be measured.

G. A. T. M.

R.I.B.A.

Mr. Prior on the Statues of Wells.

A MEETING of the Royal Institute of British Architects was held on Monday evening at 9, Conduit Street, W., the chair being occupied by Mr. Aston Webb, R.A., the president.

Mr. Webb drew attention to a circular which, through some misunderstanding, had been issued by a pro-registration committee consisting of certain members of the Institute in which, by asking for a direct opinion for or against, the matter was prejudged. Mr. Webb said the Council was quite willing to give the matter fair and careful consideration, but he thought the issue of such a circular was unwise: three members of the committee, Mr. Seth-Smith, Mr. Wimperis and Mr. Guy Dawber, had resigned in consequence of its having been sent out, and he (Mr. Webb) hoped others would do the same. He called the attention of members to the forthcoming election of Council and asked them to consider the general qualifications of each candidate, and not only whether he were a supporter of registration or not.

Mr. Edward S. Prior, M.A. Cantab., read a paper on "The Statues of Wells Front, with some Contemporary Foreign Examples of Sculpture."

The statues of Wells front, said Mr. Prior, have escaped the chances which have been almost everywhere destructive to mediæval sculpture—they have not been largely defaced by iconoclastic or political riot; they still possess their heads, arms and their main features unbroken; the face of the stone has not completely perished as so much of English building stone has done, and in the pure air of a West-country town it has been but little coated with dirt: and, as a crowning mercy, they have not been "restored" away by the "restorer." They belong to that fresh, early period of Gothic art when its expression seems to leap upward like a flame; when in the heat of it art ran molten into the moulds of new motives, when the image and superscription that for the thousand years of the Byzantine dynasty had been the currency of art was in a couple of generations entirely coined afresh, minted, as it were, for the Gothic dynasty. We can see in the Wells statues the genesis of a dominant art, the triumphant progress that marks the creation of a great style, till in the latest and best of our Wells figures has been reached the highest level of the English accomplishment.

Mr. Prior explained that his intention was to develop certain views upon one aspect of the Wells statues which circumstances had brought to his notice. The scaffolding recently erected had given opportunity of observing at close quarters not only the matter of the portrayal but its manner; and Mr. Arthur Gardner had made photographic studies of certain features which he (Mr. Gardner) would presently put before the meeting. As a preliminary, Mr. Prior briefly surveyed the points they wished to develop.

The art of the statuary in stone is the art of his chisel. His craft lies in the edge of the chisel or other implement with which he shapes and models his stone. Mr. Prior's point was that the consideration of that use of the chisel gives the key to the history of English sculpture. In the simple action of cutting stone lies a world of diversity in which can be clearly mapped out territories of style. Even in the plain dressing and walling of freestone, the date and style of the masons were expressing themselves all through the Middle Ages, and this expression can be traced from one period to another by the variations in the finishing and setting of the stone employed. Fully as expressive of date and style is the signature

of the figure sculptor in his use of the chisel point upon his statue; it is the expression of his time; it shows a growth from one stage of execution to another, exhibits certain peculiarities arising from the phases of his craft, from the traditions of his age, from the texture of the stone he uses, from the commerce and connections of the habitat in which he works. His chisel conventions are the nature tongue of the sculptor. From the consideration of them we may say he is Englishman, Frenchman, Italian or German, that his craft has grown up in the works of this or that stone, that he was living at a certain date, and had, in fact, a certain position in the history of English, French, Italian or German art.

The building of Wells Cathedral was the work of sets of masons who began in the twelfth century and carried on what was practically a continuous succession of stone-cutting craft, culminating in the statues of the West front, and leading on in them from step to step of progress until the highest attainment was reached. The combination in the building of oölite in wall and arch-moulding, with limestone shafts, makes a distinct and peculiar sub-species of thirteenth-century mason-craft. It is distinguished by certain peculiarities of moulding in arch moulds and capitals, and by not having its wall-stone dressed with the notched chisel. It occurs at Sherborne, Gloucester and Exeter, but its great accomplishment was the west front of Wells, and it was in connection with its style that the great statue-making of the front was achieved.

Mr. Prior proceeded to trace back this thirteenth-century style of figurework to its early beginnings, showing how the free statue in stone grew up without any special effort in the Wells building. The head expression had been long in practice for label and corbel; the full relief and the attitude of a statue had by 1220 been for some time in the ambitions of the carver of recumbent effigies; by 1220 the draperies had made their expression in the ordinary architectural carving of the mason. Nor was the motive of this great enterprise of setting up ranges of life-size saints any sudden and new idea. Life-size free-standing images had—from the tenth century, at any rate—been in the habit of English art. The manner of such representation was part of the ordinary church fitting of the time. But this statue-making was goldsmith's work—adapted for the niches of an internal screen reredos; the new thing was that the Wells figures were stone-mason's work. When the mason's skill had reached that power of carving the human figure which the building of Wells gave him, immediately the project of using his powers to furnish the great iconostasis of stone, which the west front of Wells is, would arise and would be in the natural functional development of English Gothic art.

Exhibiting the statues by slides, Mr. Prior put them into groups to show their successive stages of development and to bring out the evidence of a peculiar Wells technique which was a distinctly native possession, growing out of the Wells building and declaring itself as the production of no foreign hand. In a figure remaining at Winchester the Wells manner could be seen carried a stage further. The distinctness of the Wells treatment would display itself beside other English work, contemporary or nearly contemporary, at Westminster and Lincoln. Yet in them all—at Wells, Westminster and Lincoln—will be seen a general flavour, a generic likeness, which seems to be evident under the distinctions of species in the three. To emphasize this point Mr. Prior referred to contemporary work abroad. Despite similarities and often identities of the subject of statue-making, despite the likenesses of treatment as to the characters represented, despite the close parallelism in the conditions of the

sculptors, abroad as in England working up from Romanesque traditions in stone-cutting to the accomplishment of Gothic ideals, the handling of the English work shows as distinct from that abroad. There is a generic French manner displayed at Chartres, Amiens, and Rheims which, just as our English generic manner, had its own varieties, so in the sculptural development of each of these three cathedrals developed a particular specific technique that can in each case distinguish them.

Mr. Prior's conclusion was that the Wells statues were a production of English art, not, as much assertion has declared them, the work of any foreign sculptor. For as it can be clearly seen that neither the sculptors of Westminster nor Lincoln carved figures like those of Wells, so equally must those of Chartres, Rheims or Amiens be acquitted of having had a share in them.

A discussion followed.

LAMPS AND SIGNS IN THE CITY.

THE Streets Committee of the Public Health Department of the Corporation of the City of London has just issued a series of regulations relating to lamps, clocks, cranes and projecting boards within the City. In future every application for a lamp, clock or crane must be accompanied by drawings showing the dimensions, mode of fixing and total projection from the frontage line. Lamps not used for shop-window lighting must not be less than 12ft. from the footway, while their external dimensions, including frame and ornaments, must not exceed 5ft. in height and 3ft. in any other direction. They must not project more than 4ft. 6in. from the front of the house, or be less than 2ft. from the carriageway. Advertisements may be placed on the sides but not on the bottoms of such lamps, which must be kept lighted from sunset until the premises upon which they are fixed are closed. With regard to lamps used for shop-window lighting, the underside portion must not be less than 8ft. from the pavement, the extreme projection over the public way not exceeding 3ft. when the width of the pavement permits and not less than 2ft. from the carriageway. The external dimensions of such lamps must not exceed 2ft. 3in. in any direction. No lettering by way of advertisement will be permitted on the dials of clocks, which must be synchronized with Greenwich time at the expense of the owners. Trade advertisement boards may be erected provided they do not exceed 3ft. in width by 2ft. in height and 3ft. in thickness, with a projection of not more than 3ft. 6in. from the front of the building to the extreme edge of the board or tablet; but in no instance beyond 2ft. inside the line of kerb. The height of such projections must in future be of a minimum of 9ft. from the pavement to the underside of the board.

German House Architecture.—A useful addition to the literature of domestic architecture is Dr. Walther Dietrich's "Beiträge zur Entwicklung des Bürgerlichen Wohnhauses in Sachsen im 17 und 18 Jahrhundert" (Leipzig: Twietmeyer). This short treatise is unusually well illustrated with 142 photographic reproductions.

A new Workhouse at Newport, Mon., has been erected from plans by Mr. B. Lawrence & Son, of Newport. The buildings, which occupy the old site on Stow Hill, have cost £58,900, and comprise twenty-one blocks. Messrs. J. Dyson Parfitt & H. Parfitt, of Newport, were the contractors. There is accommodation for 600 inmates.

A CENTURY OF BUILDING PRICES.—IV.

By T. E. COLEMAN, F.S.I.

(Continued from p. 162, No. 478.)

THE prices of materials given in Skyring's builders' prices for 1811 are as follows:—

Bricks.		s.	d.
Place bricks	- - - per hundred	5	0
Stock bricks	- - - ditto	6	0
Cutters	- - - ditto	18	0
Welch fire-bricks	- - - ditto	32	0
Tiles.		s.	d.
Pantiles	- - - per hundred	16	6
Plain tiles	- - - ditto	7	6
Limes, Mortar, &c.		s.	d.
Lime	- - - per hundred	18	6
Mortar	- - - per load	20	0
Parker's cement	- - - per bushel	7	0
Sand	- - - per load	7	0
Laths, Hair, &c.		s.	d.
Fir laths (single)	- - - per bundle	4	0
Oak laths	- - - ditto	6	6
Hair	- - - per bushel	2	0
Timber in Scantlings.		s.	d.
Dantzic	- - - per ft. cube	9	0
Memel	- - - ditto	8	0
Swedish	- - - ditto	7	9
Brewick or Dram	- - - ditto	5	3
Oak	- - - ditto	8	0
Elm	- - - ditto	5	0
Ash	- - - ditto	5	6
"All cartage to be charged extra."			
Deals and Battens.		s.	d.
12ft. run of 2½in. battens	- each	8	2
Ditto 3in. ditto	- ditto	9	10
12ft. run of 2½in. deals	- ditto	10	5
Ditto 3in. ditto	- ditto	12	6
Hard Woods.		s.	d.
rin. wainscot	- - - per ft. super	1	10
rin. oak	- - - ditto	0	10
rin. elm	- - - ditto	0	6
Ironmongery, &c.		s.	d.
2in. butt hinges	- - - per pair	0	10
4in. ditto	- - - ditto	2	6
18in. cross garnet or hook and eye hinges	- - - ditto	2	0
roin. bright rod bolts	- each	2	2
6in. brass flush bolts	- ditto	1	4
7in. two bolt locks	- ditto	5	9
2in. brass sash pulleys	- ditto	1	4
rin. screws	- - - per doz.	0	3
2in. ditto	- - - ditto	0	9
4in. ditto	- - - ditto	2	6
Glue	- - - per lb.	1	4
Best flax sash line	- per yd. run	0	3
White lead	- - - per lb.	0	10

Lead, &c.

Milled sheet lead	- - - per cwt.	44	0
Cast ditto	- - - ditto	42	0
Solder	- - - per lb.	1	3
½in. lead pipe	- - - per ft. run	1	0
rin. ditto	- - - ditto	2	0
2in. ditto	- - - ditto	4	9
rin. brass stop cock or bib	- each	10	0

A comparison with the prices charged for materials in 1776 shows that in every article of importance a very considerable increase has taken place, in addition to the higher rates of wages now paid. The cost of building must therefore have been about twice as expensive as it had been thirty-five years previously.

In 1826 the sixteenth edition of Skyring's builders' price-book was issued "corrected from the prime cost of materials and labour, including the advances in wages, bricks, slates, ironmongery, &c., to the present time." That the author's efforts to produce a practical price-book had been appreciated may be gathered from the preface to this edition, where it is stated that more than 50,000 copies of the work had been sold. We now quote the principal items and prices for builders' work as given at this date in order to show the difference since 1811.

Skyring's Builders' Prices for 1826.

EXCAVATOR'S MEASURED PRICES.

	All materials.	Labour only.
	s. d.	s. d.
Digging and throwing out in common foundations not exceeding 6ft. deep		
per yd. cube	0	9
Ditto in gravel or clay ditto	1	0
Add if wheeled not exceeding 20yds.	0	4
For every additional 20yds.	0	4
add	0	4
Carting away (not exceeding one mile)	4	6
As compared with the prices given in 1811 for excavator's work, it will be seen that the prices are slightly reduced in this edition.		

BRICKLAYER'S MEASURED PRICES.

Note.—The author states that "these calculations are made from the prime cost of place bricks delivered at the job at 42s. per thousand, and 50s. for stocks, the average at this time."

	All materials.	Labour only.
	£ s. d.	£ s. d.
Place bricks laid dry in wells, &c.	13	14
Ditto, all stocks	15	5
Place bricks in party or external walls in mortar	15	5
Ditto, all stocks ditto	16	15
Ditto done in best manner, picked for the outside and jointed	17	10

If done with river sand, add	0	10	0
Half brick work laid in Roman cement, with cross joints bedded	0	0	9
per ft. super.	0	0	9
One-brick ditto	0	1	4

The analyses of cost of brickwork are given as follows:—

PLACE BRICKS LAID DRY IN WELLS, &c.			
(1826).			
	Per rod.		
	£	s.	d.
5,000 place bricks, at 42s. per M.	10	10	0
Bricklayer and labourer, three days each laying ditto	-	1	8. 6
			<hr/>
	11	18	6
Add 15 per cent. profit	-	1	15. 9

Per rod	-	-	£13 14 3
PLACE BRICKS IN PARTY OR EXTERNAL WALLS (1826).			

4,500 place bricks, at 42s. per M.	9	9	0
1½ cwt. of lime, at prime cost	0	17	3
3 loads of road drift, at ditto	0	10	6
Labour only, at ditto	2	5	0
Use of scaffolding	0	4	0
	13	5	9
Add 15 per cent. profit	1	19	10

Note.—If done with river sand add 10s. per rod.

It will be observed that in the analysis for brickwork laid dry in wells 5,000 place bricks are now provided as against 4,760 in the price-book of 1811, whilst the provision for labour has been reduced from £1 15s. to £1 8s. 6d., but the total result is that the cost of the brickwork is raised from £13 10s. to £13 14s. 3d. For brickwork in mortar, road drift was apparently largely used for mortar in ordinary work, for we find the author pricing the brickwork on this basis, with an addition of 10s. per rod if river sand is used. As compared with the same class of work in 1811, we therefore find the price is raised from £15 12s. to £15 15s. 7d. Roman cement

now takes the place of tarras, and is also cheaper.

ARCHES.

	All materials.	Labour only.
	s. d.	s. d.
Rough camber or semi-arched, axed off the soffits and set in mortar for pointing	0	6
- per ft. super.	0	6
Rubbed and gauged camber arches set in putty	3	6
ditto	3	6

POINTING.

Tuck pointing, with a neat joint on new work, with the perpend regarded		
per ft. super.	0	6
Note.—If the scaffold has not been removed since the erection of the new building, deduct	0	1

BRICKNOGGING.

Stock-bricks laid edge-ways	3	3	0
per ft. super.	3	3	0
Ditto ditto flat	4	3	0
ditto	4	3	0
"N.B.—The quartering not to be deducted."			

BRICK PAVING.

Common hard stock, flat in sand	3	0	0
per yd. super.	3	0	0
Ditto on edge	4	3	0
ditto	4	3	0
Ditto, flat in mortar	3	6	0
ditto	3	6	0
Ditto on edge	4	9	0
ditto	4	9	0

PANTILING.

Pantiling, laid dry		
per square	34	0
Ditto, pointed inside only, add	9	0

PLAIN TILING.

Plain tiling on double for laths and wrought nails	60	0	7
per square	60	0	7
Ditto on oak laths	63	0	8
ditto	63	0	8

"EXPLAINED PRICE OF A SQUARE OF PLAIN TILING."

	£	s.	d.
765 plain tiles at 4s. 4d.	-	1	13 2
Nails and tile pins	-	0	2 0
One bundle of laths	-	0	4 0
Five hods of mortar	-	0	3 4
Labour	-	0	7 6

Twenty per cent. profit

Per square

This analysis differs somewhat from that given in 1811, the quantities of materials being slightly increased, but the total cost per square is lower.

SLATER'S MEASURED PRICES.

	All materials.	Labour only.
	s. d.	s. d.
Welch Slates.		
Ladies	45	0
Countesses	48	0
Duchesses	50	0
Westmoreland	84	0

The author goes on to state that he "is commissioned by a slate merchant of the first respectability to supply the public with Welch slates of a superior quality on the following low terms:—

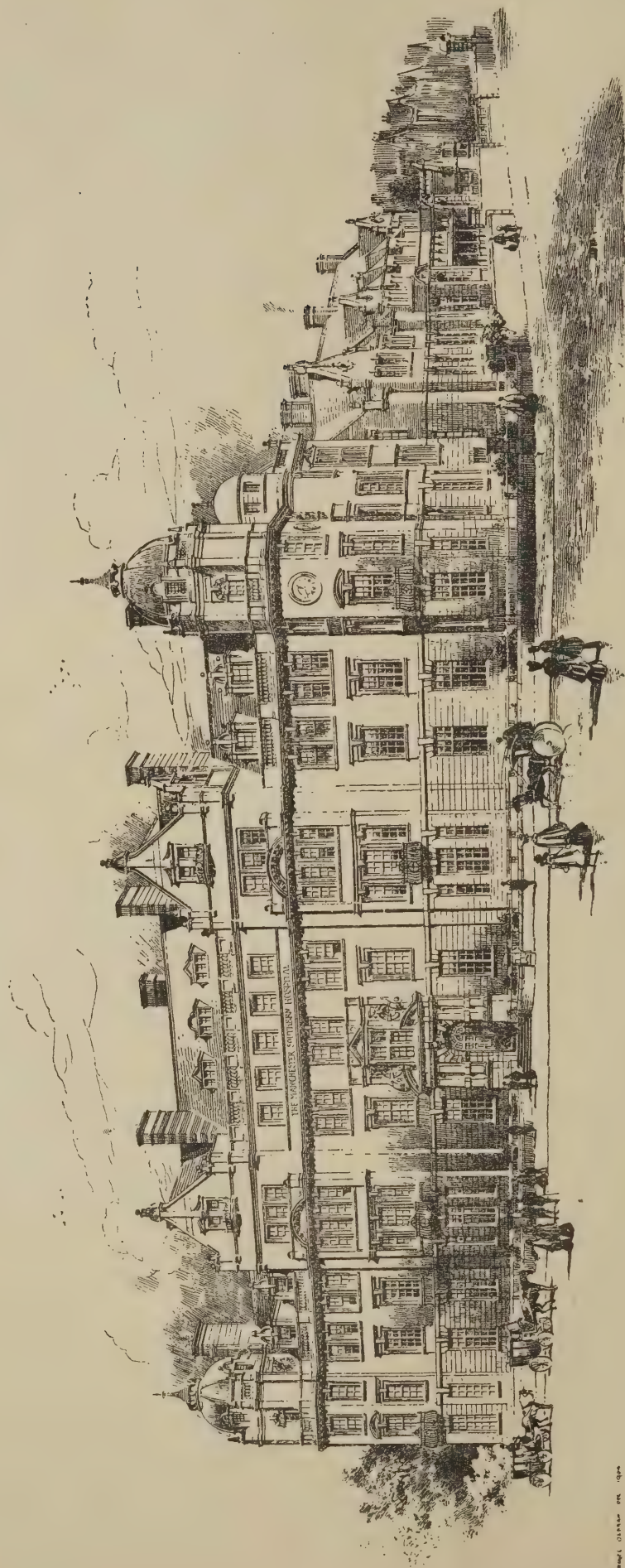
	£	s.
Duchesses per 1,000, long tail, will cover 9 squares at - - -	17	10
Countesses ditto, 7 ditto - - -	12	10
Ladies ditto, 4½ ditto - - -	6	10
Westmoreland ditto, 2½ ditto -	6	10

Slates, in consequence of the extreme consumption are excessive dear, but in all probability they will shortly fall at least from 15 to 20 per cent."

It will be observed that the prices quoted for Welch slating are slightly lower than those given in 1811.

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Supplement to
 THE BUILDERS' JOURNAL AND ARCHITECTURAL RECORD,
Wednesday, April 20th, 1904.



H. L. CLARK, DES. 1904



THE MANCHESTER SOUTHERN HOSPITAL FOR WOMEN AND CHILDREN. JOHN ELY, F.R.I.B.A., ARCHITECT.

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MASON'S MEASURED PRICES.

Stone.	s.	d.
Portland stone - per ft. cube	5	0
Ditto exceeding 6ft. long - ditto	5	6
Painswick stone - ditto	4	9
Bath stone - ditto	4	0
Ditto in lengths exceeding 6ft. ditto	4	6

The author makes the following remark with regard to the limited use of Bath stone in the metropolis: "This stone, whether from prejudice, or want of a regular supply to the London market, is not generally known in the building line, otherwise it would save a considerable expense, and in many cases answer the purpose of Portland."

Labours on stone.	Portland.	Bath.
	s. d.	s. d.
Plain work - per. ft. super.	1 2	0 8
Sunk ditto - ditto	1 8	0 10
Moulded ditto - ditto	2 0	1 2

Yorkshire stone paving.	per ft. super.	s.	d.
3in. paving -	1 4		
Ditto rubbed - ditto	1 8		
3in. rubbed landings - ditto	2 6		
York quarry-worked window sills, 8in. wide, sunk and throated			
	per ft. run	1	9
Bath ditto - ditto		1	8

CARPENTER'S MEASURED PRICES.

Memel Fir.
"At the prime cost in the timber yard of £6 10s. per load."

	All materials.	Labour only.
	s. d.	s. d.
In all kinds of work where the labour is charged		
per ft. cube	4 0	—
In bond and plates - ditto	4 9	0 6
In framed work - ditto	5 3	0 10
Wrought and framed ditto	5 6	1 0
Wrought, framed, rebated and beaded - ditto	6 0	1 6
Ditto in proper door cases ditto	7 3	2 6

English Oak.	per ft. cube	s.	d.
In all kind of work where the labour is charged	6 6	—	
In bond and plates - ditto	7 6	0	8
In framed work - ditto	8 0	1	0
Wrought and framed ditto	8 6	1	6
Wrought, framed, rebated and beaded - ditto	9 6	2	0
Ditto in proper door cases ditto	10 0	3	4

A comparison with the prices of 1811 shows that the average prime-cost of fir timber has been reduced from £14 per load to £6 10s., thus making a very considerable difference. The current rate for deals as required for joiners' work, &c., is also taken at "the prime cost of £45 per hundred for 12ft. 3in. deals in the timber yard, and battens of equal description are usually charged at two-thirds of the same, with the carting, sawing, waste and profit attached." In 1811 good average quality deals were then priced at £60 per hundred and battens at £40 per hundred, as compared with the prices of £45 and £30 respectively for similar materials in 1826.

BRACKETING.	All materials.	Labour only.
	s. d.	s. d.
Bracketing, including plugging, to common cornices		
per ft. super.	0 10	0 4

CENTERING.	per square	s.	d.
Common centering to vaults on three proper rin. deal ribs with 3/4in. deal boarding fixed with fir bearers (use and waste only)	38 6	8	0
Ditto to apertures			
per ft. run	1 6	0	3

ROUGH BOARDINGS, &c.	All materials.	Labour only.
	s. d.	s. d.
1in. deal rough boarding under slates - per square	50 0	3 6
1in. ditto, edges shot - ditto	53 6	4 6
1in. sound boarding with double fillets - ditto	38 0	5 9
1in. battensings to walls ditto	15 6	3 6
If to be sawn out add ditto	—	0 9

Floors.	per square	s.	d.
1in. white deal, wrought and laid folding	60 0	7	3
1in. yellow deal, rough and edges shot - ditto	57 0	4	0
1in. ditto, wrought, laid folding, straight joint			
splayed headings - ditto	68 0	9	3
1 1/2in. ditto ditto with tongued headings - ditto	89 6	11	6
If any of the above are ploughed and tongued add	8 6	3	0
1 1/2in. yellow battens, straight joint, tongued headings, and edge nailed - ditto	96 6	15	0
Ditto, dowelled - ditto	114 0	20	0

INCH DEAL.	per ft. super.	s.	d.
Rough -	0 7	0	0 3/4
Ditto, edges shot - ditto	0 7 1/2	0	1
Wrought one side - ditto	0 8 1/2	0	2
Wrought two sides - ditto	0 9 3/4	0	3

SKIRTINGS, WITH BACKINGS COMPLEAT.	All materials.	Labour only.
	s. d.	s. d.
1in. torus skirting	1 1	0 4
Narrow skirting grounds (per ft. run)	0 2	0 0 1/2

SASH FRAMES.	per ft. super.	s.	d.
Deal cased frames, oak sunk sills, deal pulley pieces, for 1 1/2in. sashes, prepared for double hanging, with iron sash pulleys -	1 1	0	4
Ditto for 2in. sashes - ditto	1 3	0	4 1/2
Plain solid frames, oak sunk sills, weathered, throated, rebated and beaded for French casements - ditto	1 1	0	4

SASHES.	per ft. super.	s.	d.
1 1/2in. deal ovolo sashes	0 9	0	4
2in. ditto - ditto	0 10	0	4 1/2

DOORS.	per ft. super.	s.	d.
1in. deal ledged doors, wrought, ploughed and beaded	1 4	0	4
1 1/2in. four panel bead butt and square - ditto	1 7	0	7
Ditto ditto moulded and square - ditto	1 7	0	7
2in. deal framed doors, filled in with 1in. deal rebated and beaded boarding - ditto	1 10	0	8

PLASTERER'S MEASURED PRICES.	per yd. super.	s.	d.
Render one coat, per yd. super.	0 6	0	2 1/2
Ditto and set ditto	0 10	0	4
Ditto floated and set ditto	1 5	0	6 1/2

Ceilings and partitions.	per yd. super.	s.	d.
Lath only	0 10	0	2
Lath and plaster one coat	1 4	0	4
Lath, plaster and set ditto	1 9	0	6
Lath, plaster, float and set ditto	2 5	0	9

Cornices.	per ft. super.	s.	d.
Plain cornices	1 3	0	8

"These calculations are made from the prime cost of materials at this time, for 100yds. of render and set, and 130yds. of lath, lay and set, being the nearest average that can be ascertained on the following articles":—

MATERIALS, &c., USED TO 100YDS. OF RENDER AND SET (1826).

	£	s.	d.
1 1/2 hundreds of lime at 11s. 6d.	0	17	3
Double load of river sand	0	14	0
Plasterer, 3 days at 6s.	0	18	0
Labourer, 3 days at 3s. 6d.	0	10	6
Boy, 3 days at 1s. 8d.	0	5	0
4 bushels of hair at 1s. 3d.	0	5	0

20 per cent. profit - £4 3 7

100yds. at 10d. is £4 3s. 4d.

MATERIALS, &c., USED TO 130YDS. OF LATH, LAY, AND SET (1826).

	£	s.	d.
1 load of laths	3	0	0
Ten thousand of nails at 5d.	0	4	2
2 1/2 hundreds of lime at 11s. 6d.	1	5	10
1 1/2 double loads of river sand	1	1	0
7 bushels of hair at 1s. 3d.	0	8	9
Plasterer, 6 days at 6s.	1	16	0
Labourer, 6 days at 3s. 6d.	1	1	0
Boy, 6 days at 1s. 8d.	0	10	0

20 per cent. profit - £11 4 1

130yds. at 1s. 9d. = £11 7s. 6d.

Limewhiting.	All materials.	Labour only.
	s. d.	s. d.
Limewhite, once		
per yd. super.	0 1 1/2	0 1
Ditto, twice - ditto	0 2 1/2	0 1 1/2
Wash, stop and common colour - ditto	0 4 1/2	0 2 1/2

Roman Cement.	per yd. super.	s.	d.
Plain face on brick, jointed	3 9	1	2

PAINTER'S MEASURED PRICES.

Plain Painting.	per yd. super.	s.	d.
Common colours once in oil, including knotting -	0 4		
Ditto twice, including stopping	0 7		
Ditto four times - ditto	1 1		
Patent green, yellow, or other superior colours, add - ditto	0 8		

Skirtings, &c.	per ft. run	s.	d.
Plain narrow skirtings not exceeding 8in. wide, once in oil	0 1		
Ditto twice - ditto	0 1 1/2		
Ditto four times - ditto	0 2 1/2		
Ditto exceeding 8in. wide, once in oil - ditto	0 1 1/2		
Ditto twice - ditto	0 2		
Ditto four times - ditto	0 4		
Water trunks once in oil - ditto	0 1		
Ditto twice - ditto	0 2		
Ditto four times - ditto	0 4		

Sash Frames.	each	s.	d.
Once in oil -	0 9		
Twice in oil - ditto	1 5		
Four times in oil - ditto	2 6		

Sash Squares.	per doz.	s.	d.
Once in oil -	0 9		
Ditto twice - ditto	1 5		
Ditto four times - ditto	2 6		

Graining, &c.	per ft. super.	s.	d.
Graining wainscot or oak	0 3		
Varnishing once in best copal	0 9		
Ditto twice - ditto	1 3		
Writing plain letters - per in.	0 0 1/2		

GLAZIERS' MEASURED PRICES (per ft. super.).		
Best Newcastle in new sashes from	s. d.	
3ft. to 3ft. 3in.	- - -	3 4
Ditto 2ft. to 2ft. 6in.	- - -	3 0
Ditto under 2ft.	- - -	2 10
Thirds Newcastle in ditto from 3ft. to		
3ft. 3in.	- - -	2 6
Ditto under 2ft.	- - -	2 0
Ground glass in squares 2ft. to		
2ft. 6in.	- - -	4 3
Ditto under 2ft.	- - -	3 9

"The above prices are regulated from the prime cost of the best glass at the merchants at £11 per crate containing 12 tables; seconds at £11 3s. of 15 ditto; thirds at £11 11s. of 18 ditto."

Daywork Prices (1826).

LABOUR (per day).

Bricklayer (from Lady day to Lord Mayor's day)	- - -	6 0
Ditto (from Lord Mayor's day to Lady day)	- - -	5 8
Labourer (from Lady day to Lord Mayor's day)	- - -	3 6
Ditto (from Lord Mayor's day to Lady day)	- - -	3 4
Mason	- - -	6 0
Carpenter or joiner	- - -	6 0
Plasterer	- - -	6 0

The labour rates do not differ very considerably from those quoted in 1811, so that wages appear to have been more or less stationary during that time.

MATERIALS.

Bricks.		
Place bricks	- - per hundred	5 0
Stock bricks	- - ditto	6 0
Cutters	- - ditto	15 0
Welch firebricks	- - ditto	28 6

Tiles.		
Pantiles	- - per hundred	13 6
Plain tiles	- - ditto	5 6

Limes, Mortar, &c.		
Lime	- - per hundred	14 6
Mortar	- - per load	18 0
Roman cement	- - per bushel	2 0
Sand	- - per load	7 0

In 1811 Parker's Roman cement was quoted at 7s. per bushel for daywork prices as against the price of 2s. now stated, showing an important decrease in its prime-cost value. Bricks remain about the same price, but tiles, lime and mortar are slightly less.

Laths, Hair, &c.		
Fir laths (single)	- per bundle	2 0
Oak laths	- - ditto	5 6
Hair	- - per bushel	1 4
Whiting	- - per doz.	0 7

Timber in scantlings.		
Dantzic, Riga, Memel, Swedes or American red pine	- per ft. cub.	4 0
Dram, yellow Quebec and other inferior firs	- - ditto	3 6
"All cartage to be charged extra."		

Deals and battens.		
12ft. run of 2½ in. battens	- each	5 8½
12ft. run of 2½ in. deals	- ditto	8 6
Ditto 3in. ditto	- ditto	9 9½

Hard Woods.		
1in. wainscot	- per ft. super.	1 5
1in. oak	- ditto	0 9
1in. Honduras mahogany	- ditto	2 0
1in. Spanish ditto	- ditto	2 10
1in. elm	- ditto	0 5

Ironmongery.		
4in. cast butts with screws	per pair	2 2
4in. wrought ditto	- ditto	2 7
18in. cross garnet, or hook and eye hinges	- ditto	2 2
10in. bright rod bolts	- each	1 10
6in. brass flush bolts	- ditto	1 3
6in. two-bolt locks	- ditto	4 0
2in. brass sash pulleys	- ditto	1 2
1in. screws	- per doz.	0 4
2in. ditto	- ditto	0 8
4in. ditto	- ditto	1 4

MATERIALS—cont.

Ironmongery—cont.		
Glue	- - per lb.	1 2
Best flax sash line	- per yd. run	0 3½
White lead	- - per lb.	0 8
Lead, &c.		
Milled sheet lead	- per cwt.	34 0
Cast ditto	- ditto	32 0
Solder	- per lb.	1 2
½ in. lead pipe	- per ft. run	0 8
1 in. ditto	- ditto	1 9
2 in. do.	- ditto	4 3
1 in. brass stop-cock or bib	each	17 0

Keystones.

Quantity Surveying as a Profession is the subject of an article by Mr. P. J. Lucas in the April issue of "The Partner" (65A, Cannon Street, E.C., price 3d.).

Mr. W. W. Robertson has retired (on pension) from the office of principal architect and surveyor for Scotland of the Commissioners of H.M. Works and Public Buildings. He held the office for twenty-seven years. Mr. W. T. Oldrieve, F.S.I., has been appointed his successor.

University College, London. - A course of lectures on "The History of Architectural Development," by Prof. F. M. Simpson, will begin on Friday, April 22nd, at 11 a.m. Fee for the term's course, £1 1s. Students who wish to take studio work in addition pay £2 2s. a term for one day, £3 15s. 6d. for two days, and £5 5s. for three days extra.

St. Paul's School for Girls at Brook Green, Hammersmith, was opened last week by the Princess of Wales. Mr. Gerald C. Horsley was the architect. Accommodation is provided for four hundred girls, at a cost of £60,000. Mr. H. Pegram, the well-known sculptor, has executed some reliefs representing science and art.

In the Two old Country Houses, Royston Chase and Drayton Manor, which form prominent scenes in "The Sword of the King," at Wyndham's Theatre the rooms have been made interesting by carved antique furniture and tapestries supplied by Messrs. Oetzmann & Co., of Hampstead Road, W., who are so frequently commissioned to provide furniture for the London stage.

Messrs. John Broadwood & Sons, Ltd., the well-known pianoforte makers, have formulated a scheme by which any school authority can obtain the best possible instruments on terms which practically relieve the ratepayers of everything but a nominal cost. This much-needed assistance to the education authorities of the country is likely to be of permanent usefulness. Wimbledon is among the first districts to take advantage of it.

Walsall Architects and the Carnegie Library Plans. - The memorial from the Walsall architects with respect to the plans for the proposed new free library has been considered by the General Purposes Committee, but owing to the exceptional circumstances of the case the Committee are unable to recommend any departure from the resolution passed by the Council that Mr. J. S. Gibson be asked to submit a design for the proposed new building.

French Architecture. - A reprint of Jacques François Blondel's great work "L'Architecture Française" is being produced under the auspices of the Ministry of Fine Arts. It is edited by MM. Guadet and Pascal, and will be issued in four volumes at the price of 360fr. for the set, to be raised to 400fr. on completion of the publication. The first volume appeared on March 20th, and can be obtained from E. Levy, 13, rue Lafayette, Paris, or through any of the foreign booksellers of London.

The Manchester Soldiers' Memorial is to be undertaken by Mr. Hamo Thornycroft, R.A. The cost will be about £2,000.

Stow's Monument in St. Andrew Under-shaft, Leadenhall Street, is to be restored by the Merchant Taylors' Company.

George's Dock Baths, Liverpool. - No plans are yet being prepared in view of the fact that the matter was only decided by the Lord Mayor's casting vote (see p. 182 of our issue for last week).

Ferro-Concrete and Fire-Resistance. - In the article under this heading in our last week's issue we omitted to state that the Hennebique patents are controlled in England by Mr. L. G. Mouchel, of 38, Victoria Street, Westminster.

A Roman Catholic Church at Shepherd's Bush (dedicated to the Holy Ghost and St. Stephen) has just been opened. It has been designed by Canon Scoles, of Basingstoke, in the early Gothic style of architecture and has cost about £4,000.

The London Society of the Corporation of Accountants has removed to more commodious offices at 14-18, Queen Victoria Street, E.C., and Mr. T. Hallett Fry, F.S.S., F.C.I.S., corporate accountant, has been appointed secretary.

A Re-stained Glass Window. - Twenty years ago a stained-glass window designed by Sir E. Burne-Jones was placed in St. Martin's Church, Birmingham, where the designer attended as a boy. A few years later it was noticed that the colours were fading, and recently it has been removed in sections and re-stained.

Theft by a Manchester Architect. - At Salford Hundred Sessions last week John Hickson, described as an architect, was charged with stealing a silver cup, valued at £5 5s., the property of Mr. Watson, of Old Trafford. The jury found him guilty, and sentence of one month's imprisonment in the second class was passed. Prisoner is connected with some of the best families in Manchester and has got through a large fortune. Up to two years ago there was nothing whatever against his character.

The Cartwright Memorial Hall, Bradford, which has been erected to the memory of Dr. Cartwright, the inventor of the power loom and other machinery in connection with the textile industry, was opened last week. Competition was invited for plans and designs, and Mr. Alfred Waterhouse, R.A., awarded the first premium of £150 to Messrs. J. W. Simpson and E. J. Milner Allen, of London. The hall is erected on the site of the old mansion in Lister Park, where Lord Masham formerly resided. The design is of Italian Renaissance type.

The Ancient Church of Borgund, Norway, was first robbed and then destroyed by fire last week. Thus Norway has lost its most ancient parish church, dating from the eleventh century. The church was one of the only two ancient ecclesiastical buildings left in Norway. Ancient Norwegian architecture was entirely of wood, and it is for that reason so few remains have been preserved. Borgund Church had often been coated with pitch to preserve it. There were six tiers of roof at different heights, each point being finished off by a cross or a rudely-carved grotesque dragon's head. The combined effect of the numerous small roofs and the carvings gave a very pagoda-like appearance. The dimensions of the interior were:—Nave, 23ft. long by about 20ft. wide; chancel, about 16ft. by 11ft. The pillars of the interior were tree trunks a little more than a yard in circumference and roft. in height. These pillars of pine trunks divided the nave from the aisles; there were four down each side, and two at each end of the nave—twelve in all.



THE BUILDING OF HOYLE'S WAREHOUSE, MANCHESTER (Photograph taken on April 9th). CHARLES HEATHCOTE AND SONS, ARCHITECTS.

HOYLE'S WAREHOUSE, MANCHESTER.

THE photograph reproduced above is the fifth we have now published showing the erection of this warehouse. In our issue for last week we gave a view taken on March 19th. The one here shown was taken on April 9th. It will thus be noticed that we have skipped two weeks, on account of the Easter holiday which intervened, and also in order to render the illustrations as current as possible. Special attention is drawn to the fireproof flooring which is making its appearance, together with the glazed brick-work in the basement. The next photograph will probably show another decided advance.

Bricks and Mortar.

Aphorism for the Week.

He that builds himself a fair house on an ill seat committeth himself to prison.—FRANCIS BACON.

Our Plates.

A NOTE on the new State capitol at Jackson, Miss., is given on p. 184 of this issue.—The plans and perspective of the Manchester Southern Hospital for Women and Children (Mr. John Ely, F.R.I.B.A., of Manchester, architect) have only just been issued, and we are unable to give any particulars of the new building till next week.

Newcastle Infirmary.

The new infirmary buildings on the Leazes at Newcastle were recently visited by the Northern Architectural Association. The architects are Mr. W. Lister Newcombe and Mr. H. Percy Adams. The frontage facing the Leazes Park is 777ft., and that on the eastern side, almost opposite the Durham College of Science, 536ft. During the past six months, in contrast with other periods,

very rapid progress has been made. The new infirmary comprises eight pavilions grouped behind and on either side of the administrative block, connected by corridors. The following summarizes the present condition:—Administrative block: Brick and stonework nearly complete, and greater part of roof on. Out-patients' block: As last month (roof on, practically completed, excepting internal work). Children's pavilion: Walls up to roof level and the roofs partly fixed. Laundry block: As last month, which means that the work is not very far on—just above the ground level. Mortuary block and out-offices: Not commenced. Pavilions 1, 2, 3, 4 and 5: Walls up and principal portion of roof on. No. 6: Plastering nearly finished and roof on. No. 7: Walls up and part of roof on. Nurses' home: Approaching completion. Small operating theatre: Walls up and roof on. Chapel: Foundations in. Large operating theatre: Walls up to ground floor. Small operating theatre No. 2: Walls up to roof level.

Liverpool Architectural Society.

THE annual report of the council for the fifty-sixth session, 1903-04 (presented to the annual general meeting held on Monday evening), states that the session has been chiefly remarkable for the increase in numbers of the junior members of the Society: the total membership is now 163. Reference is made in the report to Professor Simpson, who is now professor of architecture at University College, London; he has been an active member of the Society for the past nine years; his position at Liverpool University is filled by Prof. C. H. Reilly, M.A., A.R.I.B.A. Mr. L. P. Abercrombie is the new librarian of the Society. Mr. T. E. Eccles has been appointed joint representative of the Society on the Board of Architecture at Liverpool University. A letter was received during the session from the Society of Whitesmiths,

asking that in specifications it should be clearly stated what work should be done by whitesmiths and what by engineers. Their society considers that too much plumbing is being done by engineers, to the detriment of good work. The Council did not think that this was a matter in which they could interfere. After some preliminary correspondence, a deputation from the master-builders' association met the president (Mr. Thicknesse) and Mr. Culshaw with reference to the growing custom of specifying that builders must include in tenders a sum for attendance on work to be done by specialists. They stated that the architect was in a better position for estimating the cost of attending on specialists, and it would be mutually fairer for him to state a sum, instead of leaving the amount to be guessed at by the builder. The Council agreed that this was reasonable, and they hope that members will see their way to follow this suggestion.

Genesis of the Christian Basilica.

MR. CHARLES HADFIELD read a paper last week before the Sheffield Literary and Philosophical Society on "The Genesis of the Christian Basilica." He began by remarking that the genesis of the Christian temple or basilica was to be traced to its germ in the guest chamber at Jerusalem where Christ bid St. Peter and St. John prepare for the celebration of the Last Supper. The gradual development of church planning and building was continuous with the progress of Christianity. Building ideals were permeated with the idea of devoting the best that wealth and skilled craftsmanship could evolve for God's service. Mr. Hadfield proceeded to deal with the churches erected by Constantine, and added that the first form which the Christian plan of worship assumed was a structure of oblong shape with an apsidal recess. Later, a square or apsidal room or chancel was added, with an arched opening

in which a veil was suspended in primitive days. After alluding to a number of churches built in this style, Mr. Hadfield gave interesting descriptions of old Roman basilicas and their history. He also alluded to the discoveries made of ancient Roman houses under them. He illustrated his remarks by a large number of lantern slides, and by the aid of plans explained the arrangement in the old basilica of St. Peter's, Rome, founded by Constantine and pulled down in the sixteenth century when the new basilica was begun. He traced the history and described the plans of a large number of famous churches, and remarked that Italy always had been the nursery and home of church architecture. He concluded his paper by a description of the new Westminster Cathedral, which, he said, was proving to be a further development and in every way worthy of the great churches of past ages.

Builders' Notes.

Messrs. E. H. Shorland & Brother, of Manchester, have just supplied their patent Manchester stoves with descending smoke flues, and patent Manchester grates, to the Isolation Hospital, Gosport.

Liverpool Concrete Dwellings Experiment.—The foundations of the six dwellings in Eldon Place, Liverpool, which are to be built of concrete made from the Corporation's refuse-destructors, are now being proceeded with according to the plans of the city engineer, Mr. John A. Brodie, M.I.C.E.

Co-operative Building.—The General Builders (Ltd.) of Notting Hill have orders on hand valued at £17,000, including a contract for the Commissioners of Works. The Leicester Co-operative Builders have just completed three contracts for the Leicester Corporation, including the erection of the tallest chimney-shaft in the town. At Hull, where the local Builders' Society did a trade of £6,741 during the year, a reserve fund has been commenced. The Haslemere (Surrey) Co-operative Builders had a turnover last year of £30,000, and have already received contracts of a value nearly reaching that total. The Coventry Builders—also a co-operative concern—have executed work for the local board of guardians as well as the town council.

Partnership.—Mr. Henry Parsons and Mr. Frederick Charles Mattock have entered into partnership for the purpose of carrying on a business as building contractors and decorators at 165, Gray's Inn Road, London, W.C., under the style of Mattock & Parsons. Mr. H. Parsons has for many years acted in the capacity of quantity surveyor and estimator in connection with important works in London and the country, and during recent years has been associated with Messrs. Holloway Brothers, Ltd., of Belvedere Road, London, S.E. Mr. F. C. Mattock has personally supervised the erection of large public business and private buildings in and around London during the many years he was associated with his father, Mr. Samuel Mattock (deceased), late of Mattock Brothers, Finsbury Park.

Advanced Instruction for Plumbers.—Arrangements are now being made for the special course of advanced instruction for plumbers at King's College, London, under the auspices of the Worshipful Company of Plumbers and several of the county and municipal education authorities. By the advanced instruction given at these courses and the inspection of notable plumbing works in and around London, students from the provinces acquire knowledge which they could not otherwise obtain, and the influence of their improved knowledge is traceable in the higher standard of efficiency of the

plumbing classes in the provincial centres. The classes are held in the summer of each year, and plumbing teachers and advanced students desirous of availing themselves of the facilities available at the college should apply to the education authority of the town or county in which they reside for the requisite grant or scholarship to enable them to attend.

Teesside Joiners' Dispute.—The joiners employed in the building trade at the Hartlepoons, Middlesbrough and Stockton have given notice to the Teesside Master-Builders' Association of their intention to demand an increase in their wages from 9½d. to 10d. per hour. The Association gave notice to the joiners nearly three months ago of their intention to enforce a reduction of 1d. per hour at the end of the present month, and the application for an increase is a counter-blast to this. The men contend that the building trade is not so depressed as the masters would have them believe.

A Strike at Bridgnorth.—On January 1st the Bridgnorth branch of the Operative Bricklayers' Society gave notice to the local master-builders for an advance of 1d. per hour on the existing rate of wages, and a revised code of working rules to come into operation on April 1st. The employers informed the operatives that they could not grant the advance, but were willing to consider a revision of the rules. Last month a conference took place at Bridgnorth between the employers, the operatives and the secretary of the Midland Federation of Building Trade Employers, but without any satisfactory result. The employers offered to submit the question to arbitration, and the operatives undertook to consider the offer. Since then the operatives have informed the secretary of the Midland Federation that they have decided not to submit the matter to arbitration, and last week the men decided to stop work.

Bankruptcies.

[Abbreviations: R.O.—receiving order; P.E.—public examination; C.C.—county court; O.R.—official receiver; Adj.—Adjunction.]

DURING THE WEEK ending April 15th eighteen failures in the building and timber trades in England and Wales were gazetted.

- E. WOSLVEN, builder, Enfield. R.O. April 8th.
J. PARKER, builder, Hastings. Liabilities £5,029; assets £3,096.
S. KNIGHT, F.R.I.B.A., London. Liabilities £7,649; £3,666 expected to rank; assets £1,626.
S. PARMENTER, builder and contractor, Brentwood (formerly of Braintree). Deficiency £3,154.
HADDON & WARE, builders, West Ealing. R.O. April 8th.
R. KEYWOOD, plumber and painter, Brighton. Adj. March 18th.
H. C. HUMPHREY, timber and slate merchant, Birmingham. Adj. April 7th.
T. W. ROOME, brick manufacturer, Rawmarsh, near Rotherham. Adj. April 9th.
W. HOWELL & SON, builders, Gowerton, near Swansea. R.O. April 8th.
D. WILLIAMS, joiner and builder, Caerwys. First meeting, Crypt Chambers, Eastgate Row, Chester, April 20th, at 11. P.E., Chester Castle, April 26th, at 11.
J. REES, builder, Merthyr Tydfil. First meeting, 135, High Street, Merthyr Tydfil, April 20th, at 12. P.E., Merthyr Tydfil Town Hall, May 16th, at 3.
W. L. LE MAITRE, civil engineer and surveyor, Horsforth, Leeds. First meeting, O.R.'s, Leeds, April 20th, at 11. P.E., Leeds C.C., May 10th, at 11.
R. J. BLAKE & CO, timber merchants, Ilford. First meeting, 14, Bedford Row, London, W.C., April 20th, at 3. P.E., Chelmsford Shirehall, May 4th, at 10.
R. PARKER & CO. (J. C. JOHNSON), timber merchants, Liverpool. First meeting, O.R.'s, Liverpool, April 20th, at 2.30. P.E., Liverpool C.C., April 28th, at 11.
T. SHURMER, joiner and builder, Bolton. R.O. April 6th. First meeting, 19, Exchange Street, Bolton, April 20th, at 3. P.E., Bolton C.C., April 27th, at 3.
C. B. ROBERTS & CO., builders and contractors, Tooting and Redhill. P.E., Wandsworth C.C., April 28th, at 12.
C. S. JENKS, builder and decorator, East Grinstead. First meeting, 24, Railway Approach, London Bridge, April 21st, at 11.30. P.E., Tunbridge Wells Town Hall May 9th, at 2.30.

IN PARLIAMENT.

(By our Press Gallery Representative.)

MR. WYNDHAM, the Chief Secretary for Ireland, has informed Mr. Clancy that in the construction of the new College of Science in Dublin every consideration will be given to the suggestion that Irish materials should be used as far as possible and that those persons engaged in working Irish quarries should have a full opportunity of tendering for contracts for stone. The foundation-stone will be of Newry granite. Replying to Mr. Mooney, who asked the name and qualifications of the architect for the proposed new college, Mr. Victor Cavenish stated that the architect was Mr. Aston Webb, President of the Royal Institute of British Architects, with whom would be associated Mr. T. M. Deane, an Irish architect, who has already been engaged upon public buildings in Dublin.

Lord Stanmore has given notice that he will move in the House of Lords that a select committee be appointed to enquire into and report with respect to the unfinished condition of the rooms in the Palace of Westminster appropriated to the service of the House of Lords and its approaches.

Lord Balcarras, replying to Mr. John Ellis, who asked what sums were voted and spent on works of sanitation or improvement in the House of Commons, its precincts and committee-rooms during the years 1901-2, 1902-3 and 1903-4, said the sums voted in the three years respectively were £250, £6,400 and £850, the sums expended being £1,333, £4,057 and £830 respectively.

The director of the National Gallery in his report for the year 1903, which has been presented to Parliament, states that at a meeting of the National Gallery Board held in June last he drew attention to the need of extension of the Gallery and expressed the opinion, with which the Trustees present concurred, that it was now desirable to obtain some definite recognition of the claim of the National Gallery to the site in the rear of the building hitherto occupied by St. George's Barracks, a claim strengthened by the fact that the National Portrait Gallery had been allotted a site from ground originally acquired for the enlargement of the National Gallery. To the representations which the Director, by the authority of the Board, made to the Government on the subject, the following reply, dated September 5th, 1903, was received from His Majesty's Treasury: "My Lords were prepared to sanction the extension of the National Gallery as the ground in the rear of the existing building should be surrendered by the War Department, but that no definite promise could at present be given that the entire site should be given up to this purpose." It was also stated that "My Lords" were ascertaining what, if any, part of the space in question might be available for an extension of the Gallery to be commenced in the course of the ensuing financial year.

Lord Cromer in his report on the finances, administration and condition of Egypt states that few points of economic interest are more remarkable than the great increase in the imports of wood for building purposes of late years. Apart from the large amount of building undertaken in the towns, Lord Cromer notices that every village he visits now contains some houses in which the doors, window-frames, &c., are made of wood. Such constructions used to be remarkable rare.

Allusion is also made in the report to the re-erection of the eleven columns at Karnak which fell in 1899, the strengthening of the foundations of the Temple of Philæ, the preservation of Arab monuments, and the completion of the building of the Museum of Arab Art at a cost of £E66,000.

ELECTRIC LIFTS IN OFFICE BUILDINGS.

THE provision of electric or other lifts has now become essential in the great blocks of office buildings which form so prominent a feature in modern cities. By their use, rooms on the upper floors no longer suffer the disadvantage of several flights of stairs, but are brought within the easiest reach; and to architects and others who must have a good light these upper rooms are even of greater value than those on the lower floors. One of the most notable examples of modern lift installations is that which has been carried out in the huge office building recently erected by the London Wall Estate Co. (Messrs. Gordon & Gunton, architects; Messrs. Holloway Brothers, builders). Here eleven electric passenger lifts have been provided by Messrs. R. Waygood & Co., Ltd., under the superintendence of Mr. Fearnside Irvine, consulting engineer to the company. The gear is arranged in a cast-iron box with its steel worm beneath the worm-wheel, so as to be always submerged in oil, and the worm shaft fitted with a carefully designed ball thrust bearing in order to reduce the friction and current consumption. To the worm-wheel shaft is attached a winding drum around which the four lifting ropes coil. The controlling gear is of the "Waygood" special electric controller type with cylindrical car switch in the cage fitted with a detachable handle. This switch is so arranged as to ensure that all resistances are cut out gradually, thus accounting for the easy

manner in which the lift starts and stops as the operator turns the handle one way or the other. Between the gear and the controller there is a patent automatic cut-off gear operated by the revolutions of the winding drum itself, so that the cage is stopped gradually at the top and bottom levels quite independently of any control within it, and thus if the attendant should by any unforeseen chance omit to turn the switch to the "off" position when he neared either end of the travel the lift would still be stopped by this special cut-off gear.

The cage is made with a top main suspension bar and steel side rods connected with the under frame, being thus entirely self-contained. As a precaution against accidents through the failure of any one rope, it is fitted with a special safety gear having four serrated cams on steel shafts beneath the cage, and to this gear is attached an independent safety rope direct to the cams, so arranged as to pull the latter into action in the event of the ropes breaking. The salient feature of this gear is that it is not dependent on any springs for its efficiency, but is purely mechanical and automatic, and consequently positive in its action. Yet another safety device is brought into requisition on the cage. It is known as a patent slack cable safety switch, and is actuated by the relative position of the balance weight and lifting ropes. In the event of either the cage or balance weight meeting with an obstruction, causing the ropes to slacken, this little switch comes into operation, cutting off the current from the

motor and thus bringing the gear to a standstill and preventing over-winding.

These lifts have been working for some time now. They are perfectly smooth and quiet in their travel, which is eloquent testimony to the very thorough and careful attention which Messrs. Waygood have given to their design and erection.

The following table shows their capacity and travel:—

	Load.	Speed in ft. per min.	Travel.
Public lifts.	lbs.	ft.	ft. in.
1	1,200	250	100 3
2	1,050	250	104 9
3	1,050	250	115 2
4	1,050	250	103 2
5	900	250	99 9
Private lifts.			
1	450	200	36 6
2	900	180	26 0
3	1,120	90	23 6
4	1,050	220	90 3

From this it will be seen that they do fairly heavy duty, the capacity of the public lifts ranging from 900 to 1,200lbs. load travelling up to 115ft. at a speed of 250ft. per minute.

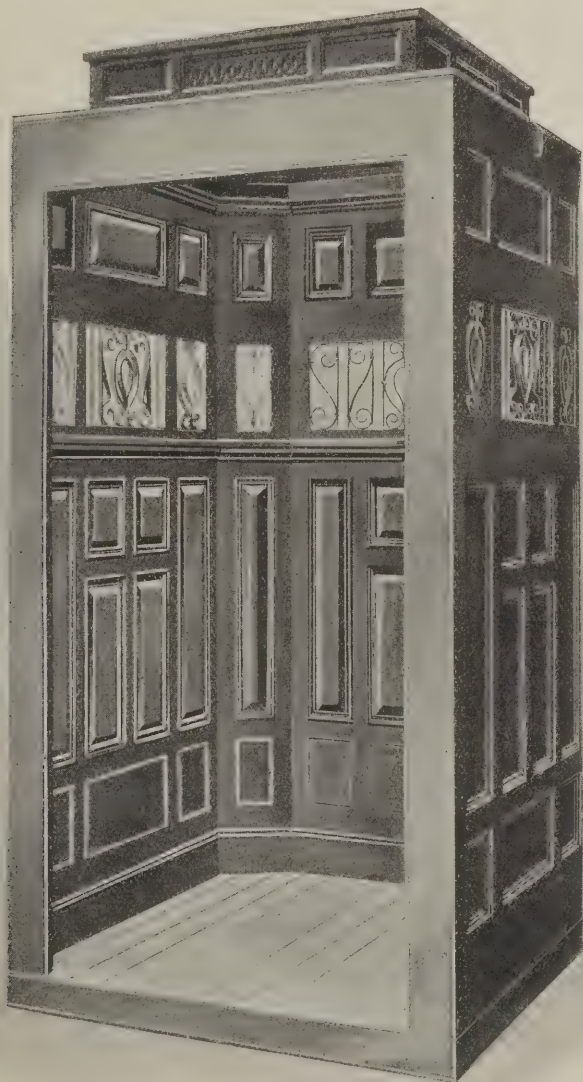
Trade and Craft.

"Ediswan" Publications.

The Edison & Swan United Electric Light Co., Ltd., continue to exhibit great activity in the issue of printed matter, which points to a considerable revival in this, one of the first electrical trading concerns, and despite the otherwise general complaint about bad business. We have now received four new Ediswan leaflets, and the company have taken the opportunity to enclose these in a new and ingenious binder intended to hold the new series of catalogue sections and leaflets now being issued by them. Later, when the series is complete, it is hoped to issue a bound catalogue. Of the leaflets to hand, No. L 2,024 describes the new pattern "Queen of Lamps" with loose opal reflector and patent adjustable sleeve. The new shape of this lamp, together with the fact that the reflector completely covers the filaments, gives it enhanced reflecting powers; a lamp rated at 16-c.p. and taking 58 ampère being capable of concentrating 32-c.p. in a vertical direction with an efficiency of 1.8 watts per c.p. The patent adjustable sleeve makes a neat finish by covering the usual gap between the lamp cap and the holder; it also keeps the reflector firmly seated on the lamp. Leaflet No. W 2,029 describes "Ediswan" pure rubber flexible cords and No. G 2,030 shows the "Fountain" shade, a device constructed of glass tubes and beads which gives a beautiful lighting effect. Leaflet No. A 2,031 describes and illustrates a complete range of the well-known "Wedge" Tumbler switches. The "Wedge" has met with a success never before attained and has established quite a revolution in these switches.

Obituary.

Mr. Daniel Ruddle died on April 11th at his residence, Pepys Road, Wimbledon, in his eighty-third year. Mr. Ruddle, who was Sir Charles Barry's clerk of works at the Houses of Parliament, subsequently practised as an architect and surveyor, and laid out several building estates in various parts of the country. He was an accomplished draughtsman, and published a guide-book to the Houses of Parliament illustrated with his own drawings.



THE WAYGOOD LIFT AT LONDON WALL ESTATE.

Complete List of Contractions Open.

DATE OF DELIVERY	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
BUILDING:			
April 21	Bilston—Hospital	Urban District Council	J. P. Wakeford, Surveyor, Town Hall, Bilston.
" 21	Gillingham, Kent—Thirty Cottages.. ..	—	E. J. Hammond 27 Balmoral Road, Gillingham.
" 21	Liverpool—Sorting Office	Commissioners of H.M. Works, &c.	Secretary, H.M. Office of Works, &c., Storey's Gate, London, S.W.
" 21	Seaforth, Liverpool—Sorting Office	Commissioners of H.M. Works, &c.	Secretary, H.M. Office of Works, &c., Storey's Gate, London, S.W.
" 21	Crewe—Alterations, &c.	Town Council	G. E. Shore, Borough Surveyor, Crewe.
" 21	Golcar, Yorks—Villa	—	J. Berry, 3 Market Place, Huddersfield.
" 21	Linthwaite, Yorks—Alterations, &c.	—	J. Kirk & Sons, Architects, Huddersfield.
" 21	Perth, Scotland—Shops, &c.	Co-operative Society, Ltd.	Maclaren & Mackay, 56 George Street, Perth.
" 21	Iona—Library	—	A. Maitland & Sons, Architects, Tain, N.B.
" 21	Barnard Castle—Alterations to Stables, &c.	—	T. Farrow, 7 Market Place, Barnard Castle.
" 22	Barnard Castle—Villa Residence	F. W. Raper	T. Farrow, 7 Market Place, Barnard Castle.
" 22	Griffithstown, Wales—Twenty-nine Houses	Building Club	D. J. Lougher, Architect, Bank Chambers, Pontypool.
" 22	Halifax—Warehouse	—	J. F. Walsh & G. Nicholas, Architects, Museum Chambers, Halifax.
" 22	Merthyr, Wales—Rebuilding (two contracts)	—	C. M. Davies, 112 High Street, Merthyr, Wales.
" 22	Port, Wales—Enlarging Chapel	—	D. W. Jones, 16 Cemetery Road, 10th
" 22	Shilbottle, Northumberland—Two Houses	Sir W. Church	M. T. Wilson, Architect, Alnwick.
" 22	Skewen, Wales—Church	T. C. Phillips	J. C. Rees, Architect, Neath.
" 22	Winscombe, Somerset—House	—	H. Price & W. Jane, Architects, Waterloo St., Weston-super-Mare.
" 22	Seaham, Durham—Coastguard Signal Station	—	Director of Works Dept., Admiralty, 2 Northumberland Av., W.C.
" 22	Leigh, Lancs—Infirmary	—	J. C. Prestwich, Architect, Bradshawgate Buildings, Leigh.
" 23	Llandaf, Wales—Laboratory, &c.	Glamorgan County School	G. E. Halliday, 14 High Street, Cardiff.
" 23	Ludlow—Additions to Workhouse	Guardians	W. W. Robinson, 10 King Street, Hereford.
" 23	Bandon—Fifty-seven Cottages	Rural District Council	A. Haynes, Clerk, Council Room, Workhouse, Bandon.
" 23	Caerphilly, Wales—Enlargement of Church	Rev. C. L. Price	G. E. Halliday, 14 High Street, Cardiff.
" 23	Cardiff—Erection, &c., of Structure	—	W. B. Rees, 37 St. Mary Street, Cardiff.
" 23	Sligo—Erecting Iron House	Rural District Council	M. F. Conlon, Clerk, Court House, Sligo.
" 23	Longridge—Four Houses	Co-operative Society, Ltd.	J. A. Seaward, 1 Avenham Street, Preston.
" 23	Sherborne—Cottage and Nurse's Quarters	Urban District Council	T. Farrall, Architect, Sherborne.
" 25	Norwich—Alterations, &c., to Schools	Education Committee	C. J. Brown, Architect, Cathedral Offices, 10 Lower Close, Norwich.
" 25	London, S.W.—Pulling Down Houses, &c.	—	Commanding Royal Engineer, 41 Charing Cross, London, S.W.
" 25	Chertsey—Boiler-House, &c.	Guardians	C. Welch, Architect, London Street, Cleveley.
" 25	Leeds—Baths	Corporation	J. L. Fox, Architect, Britannia Buildings, Oxford Place Leeds.
" 25	Wakefield—Asylum	West Riding County Council	J. Vickers Edwards, County Architect, Wakefield.
" 25	Pontypool—Cement and Lime	Urban District Council	P. R. A. Willoughby, Surveyor, Pontypool.
" 25	Pennygroes—Additional Building	—	R. L. Jones, County Architect, Brynogan, Talysarn.
" 25	Stanwell, Middlesex—Bridge	County Council	H. T. Wakelam, County Engineer, Middlesex Guildhall, Westminster, S.W.
" 25	Bristol—Repairs to Baths	Baths Committee	T. H. Yabbicom, 63 Queen's Square, Bristol.
" 26	Greenwich—Electricity-Generating Station	London County Council	Architect's Department, 13 Charing Cross, S.W.
" 26	Thornton, Bradford—Stone, &c.	Queensbury Industrial Soc., Ltd.	M. Hall, 1 Harrison Road, Halifax.
" 26	Brynmawr, Wales—Repairing Hotel	Buchan & Co.	T. Roderick, Architect, Glebeland Street, Merthyr.
" 26	Cwmbran, &c., Wales—Additions, &c., to Inns	Buchan & Co.	T. Roderick, Architect, Glebeland Street, Merthyr.
" 26	Southall, Middlesex—Library	Urban District Council	R. Brown, Architect, Public Offices, Southall.
" 27	Stockton-on-Tees—Workshops, &c.	Corporation	W. Ford, Manager, Gasworks, Stockton-on-Tees.
" 27	Hereford—Residence	E. F. Bulmer	Groome & Betington, Architects, Palace Chambers, Hereford.
" 27	Northallerton—Hospital	U. & R. District Councils	W. Fowle, Clerk, Northallerton.
" 27	Hereford—Additions to Hospital	—	Nicholson & Hartree, Architects, Hereford.
" 28	Witley, Surrey—Inn	Surrey Public House Trust Co. Ltd.	E. L. Lunn, 36 High Street, Guildford.
" 28	London, N.E.—Underground Convenience ..	Hackney Borough Council	N. Scorgie, Forough Surveyor, Town Hall, Hackney, N.E.
" 28	Buckfastleigh—Three Cottages	Co-operative Society	A. Warren, Architect, Fore Street, Buckfastleigh.
" 28	Bradfield, Essex—Hotel, &c.	Steward & Patterson, Ltd.	J. W. Start, Architect, Colchester.
" 29	Elancelydach, Wales—School	Rhonda U.D.C.	J. Rees, Architect, Hillside Cottage, Pentre.
" 29	Whitby and Robinhood's Bay, Yorks—Coastguard Stations (two contracts)	—	Director of Works Department, Admiralty, 21 Northumberland Avenue, London, W.C.
" 29	Cork—Thirty Houses	—	W. H. Hill & Son, 28 South Mall, Cork.
" 29	Stamfordham and Bellingham, Northumberland—Police Station and Court House.	—	J. A. Bean, County Surveyor, Moot Hall, Newcastle-on-Tyne.
" 30	Grimsby—Showrooms	Gas Company	H. Heap, Architect, Osborne Chambers, Grimsby.
" 30	Halifax—Works and Residence	—	C. F. L. Horsfall & Son, Architects, Lord Street Chambers, Halifax.
" 31	Halifax—Two Houses	—	A. G. Dalzell, 15 Commercial Street, Halifax.
May 2	Sheffield—Workshops and Stores	United Gas Light Co.	J. W. Morrison, Co.'s Engineer, Gas Co.'s Offices, Commercial Street, Sheffield.
" 2	Edinburgh—Building Stones	Corporation	W. R. Herring, Chief Engineer, New Street Works, Edinburgh.
" 3	Woodford Green—Post Office	Commissioners of H.M. Works, &c.	J. Wager, H.M. Office of Works, Storey's Gate, London, S.W.
" 3	Holyhead—School	School Board	R. E. Pritchard, Clerk, Drug Hall, Holyhead.
ENGINEERING:			
April 21	Chelmsford—Ram Pump	Rural District Council	J. Dewhurst, Engineer, Avenue Chambers, Chelmsford.
" 22	North Tawton—Reservoir, &c.	Rural District Council	G. L. Fulford, Solicitor, Northtawton.
" 23	Edinburgh—Extension Switchboard Panel, &c.	Corporation	Resident Electrical Engineer, Dewar Place Station, Edinburgh.
" 23	Barrow-in-Furness—Dam, &c.	Corporation	A. H. Strongtharm, Engr., Ramsden Square, Barrow-in-Furness.
" 23	Glasgow—Pipe-laying, &c.	Young's Paraffin Light and Mineral Oil Co., Ltd.	D. & G. K. Kankine, 238 West George Street, Glasgow.
" 25	Leeds—Turntables	Gas Committee	R. H. Townsley, General Manager, Gas Offices, Leeds.
" 25	Pietermaritzburg, Natal—Coaling Plant ..	Government of Natal	Agent-General for Natal, 26 Victoria Street, Westminster, S.W.
" 25	Stanwell, Middlesex—Bridge	County Council	H. T. Wakelam, County Engineer, Middlesex Guildhall, Westminster, S.W.
" 26	Park Royal—Electric Plant	Great Western Railway Co.	Kennedy & Jenkin, 17 Victoria Street, London, S.W.
" 27	Gateshead—Widening of Railway	North-Eastern Railway Co.	C. A. Harrison, Central Station, Newcastle-upon-Tyne.
" 28	Bradiord—Reservoir, &c.	Corporation	Waterworks Engineer, Town Hall, Bradford.
" 28	London, N.—Fire Mains, &c.	St. Mary (Islington) Guardians	W. Smith, 65 Chancery Lane, W.C.
" 29	Framborough, Yorks—Well	Bridlington R.D.C.	Elliott & Brown, Engineers, Burton Buildings, Parliament Street, Nottingham.
" 30	Golspie, Scotland—Bridge	Sutherland County Council	A. Argo, County Clerk, Golspie.
" 30	Liscannor, Ireland—Extension of Groyne, &c.	Urban District Council	H. Williams, Secretary, Office of Public Works, Dublin.
" 30	Royton, near Oldham—Tramway	Urban District Council	R. P. Wilson, 66 Victoria Street, Westminster.
May 2	Bray, Ireland—Electrical Supplies	Urban District Council	P. Macdonnell, Clerk, Town Hall, Bray, Ireland.
" 5	Swansea—Hydraulic Accumulator, Cranes, &c. (two contracts)	Harbour Trustees	A. O. Schenk, Engineer, Harbour Offices, Swansea.
" 9	Natal, South Africa—Electric Telpherage ..	Government	Sir Walter Peace, 26 Victoria Street, London, S.W.
" 9	Wesham, Lancs—Warming and Hot-water Supply	Foyle Union Guardians	Hayward & Harrison, Architects, Accrington.
FURNITURE:			
April 22	Gorton, Lancs—School Furniture	Education Committee	W. A. Clegg, Secretary, Town Hall, Gorton.
May 3	Leyton—School Furniture	Education Committee	W. Jacques, 2 Fen Court, Fenchurch Street, E.C.
IRON AND STEEL:			
April 21	Manchester—Iron and Steel Work	Gas Committee	C. Nickson, Superintendent, Gas Depart., Town Hall, Manchester.
" 23	Wigan—Steel Framework	Corporation	J. Slevin, Borough Electrical Engineer, Bradiord Place, Wigan.
" 25	Leeds—Pipes, &c.	Gas Committee	R. H. Townsley, General Manager, Gas Offices, Leeds.
" 25	Pontypool—Stores	Urban District Council	P. R. A. Willoughby, Engineer, Pontypool.
" 25	Bristol—Ironmongery, &c.	Health Committee	General Medical Superintendent, City Hospitals, 40 Prince Street, Bristol.
" 25	London, E.C.—Railway Stores	Madras Railway Company	W. H. Cole, 61 New Broad Street, London, E.C.
" 26	Ilkley, Yorks—Steelwork for Bridge	Wharfedale Estate Co., Ltd.	J. B. Fraser, 8 Park Square, Leeds.
" 26	Bamford, via Sheffield—Pipes	Derwent Valley Water Board	E. Sandeman, Engineer's Office, Bamford, via Sheffield.
" 26	Dublin—Railway Stores	Dublin, Wicklow and Wexford Rly. Co.	M. F. Keogh, Secretary, Westland Row, Dublin.
" 27	London, E.C.—Railway Stores	East Indian Railway Co.	C. W. Young, Secretary, Nicholas Lane, London, E.C.
" 28	Amsterdam—Steel Rails	Dutch Iron Rly. Co.	Commercial Department, Board of Trade, London.
" 29	Port Elizabeth, South Africa—Pipes, &c.	—	Davis & Soper, 54 St. Mary Axe, London, E.C.
May 3	London, E.C.—Railway Stores	Southern Mahratta Rly. Co., Ltd.	E. Z. Thornton, Secretary, 46 Queen Anne's Gate, Westminster.

Complete List of Contracts Open - continued.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
PAINTING AND PLUMBING:			
April 25	Faldingworth—Painting, &c.	Wesleyan Chapel Trustees	G. Stamp, Faldingworth.
" 26	Dublin—Varnishes, Paints, Oils, &c.	Dublin, Wicklow and Wexford Rly. Co.	M. F. Keogh, Secretary, Westland Row, Dublin.
May 2	Kingston-on-Thames—Painting	Guardians	W. H. Hope, Architect Seymour Road, Hampton Wick.
" 9	Egremont, Cheshire—Paints	Wallasey U.D.C.	Manager, Egremont Ferry, Cheshire.
ROADS AND CARTAGE:			
April 21	Cheshunt—Channelling	Urban District Council	R. H. Jeffes, Surveyor, Manor House, Cheshunt.
" 21	Oakham—Materials	Rutland County Council	B. A. Adam, Clerk, Oakham.
" 22	Seabam Harbour—Approach Road	Town Council	Director of Works Dept., Admiralty, 21 Northumberland Av., W.C.
" 22	Aston Manor, near Birmingham—Making-up Street	Corporation	Borough Engineer, Council House, Aston Manor.
" 22	Cheltenham—Materials	Corporation	J. S. Pickering, Borough Surveyor, Municipal Offices, Cheltenham.
" 23	Bradford—Road Metal	Bedwellty U.D.C.	J. H. Cox, City Surveyor, Town Hall, Bradford.
" 23	New Tredegar, Wales—Lowering Road	Town Council	J. H. Lewis, Surveyor, Blackwood, Mon.
" 23	Tenterden, Kent—Materials, &c.	Rural District Council	W. L. C. Turner, Borough Surveyor, Town Hall, Tenterden.
" 23	Wantage—Stores, &c.	Lewisham Borough Council	District Surveyor, East Ilsley.
" 25	London, S.E.—Paving	Urban District Council	Surveyor, Town Hall, Catford.
" 25	Pontypridd—Metalling	Urban District Council	P. R. A. Willoughby, Surveyor, Pontypridd.
" 25	Uxbridge—Granite	Urban District Council	W. T. Harvey, 61 High Street, Uxbridge.
" 27	Blackpool—Pavement Lights	Town Council	J. S. Brodie, Borough Surveyor, Town Hall, Blackpool.
" 28	Luton—Paving, &c.	Town Council	Borough Surveyor, Town Hall, Luton.
May 3	Windsor—Making-up, &c.	Education Committee	Borough Surveyor, Alma Road, Windsor.
" 3	Leyton—In-Situ Concrete Paving, &c.		W. Jacques, 2 Fen Court, Fenchurch Street, E.C.
SANITARY:			
April 22	Draycott, Derbyshire—Scavenging	Rural District Council	J. W. Newbold, Clerk, Becket Street, Derby.
" 25	Otley, Yorks—Sewerage Works	Urban District Council	I. E. Sharpe, Surveyor, Council Offices, Otley.
" 28	Bexhill, Sussex—Sewer	Corporation	G. Ball, Borough Surveyor, Town Hall, Bexhill.
" 30	Bollington, near Macclesfield—Sewerage Works	Urban District Council	W. H. Radford, Engineer, Albion Chambers, King St., Nottingham.
TIMBER:			
April 21	London, S.W.—Hardwood Sleepers	Central South African Railways Corporation	Crown Agents for the Colonies, Whitehall Gardens, S.W.
" 22	Hull—Hardwood Planks	North Eastern Railway Co.	A. E. White, City Engineer, Town Hall, Hull.
" 23	York—Sleepers	Dublin, Wicklow and Wexford Railway Co.	E. H. Clark, Stores Superintendent, Gateshead.
" 26	Dublin—Timber	Wallasey U.D.C.	M. F. Keogh, Secretary, Westland Row, Dublin.
May 9	Egremont, Cheshire—Timber		Manager, Egremont Ferry, Cheshire.

List of Competitions Open.

DATE OF DELIVERY.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	DEPOSIT REQUIRED FOR CONDITIONS, &c.	BY WHOM ADVERTISED.
April 21	Kingston-upon-Thames—School	—	—	H. A. Winsor, Town Clerk, Kingston-upon-Thames.
" 23	Llandilo, Wales—Drainage Scheme	—	—	E. Jones, Glancennen, Llandilo.
" 26	India Office, S.W.—Deck Bridges	—	—	Director-General of Stores, India Office, Whitehall, S.W.
" 30	Newcastle-upon-Tyne—Grammar School	£100, £50, £25.	£1 is.	H. J. Criddle, 2 Collingwood Street, Newcastle-upon-Tyne.
May 9	Barnet—Hospital	£25, £15, £10.	£1 is.	C. D. Byfield, 16 High Street, Barnet.
" 31	Stamford, Lincs—Public Library	£10	—	C. Atter, Town Clerk, Town Hall, Stamford.
" 31	New Somerby, Grantham—Church			Rev. H. H. Surgey, Dudley Road, Grantham.

Tenders.

Information from accredited sources should be sent to "The Editor" at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Addressed postcards on which lists of tenders may be stated will be sent post free on application to the Manager, BUILDERS' JOURNAL, 6, Great New Street, Fetter Lane, E.C.

Barnard Castle.—Accepted for new shop-front and fittings, 9, Horse Market, Barnard Castle, for Mr. J. T. Pearson. Mr. T. Farrow, architect, 7, Market Place, Barnard Castle:—

Harris & Sheldon, Ltd, Stafford Street, Birmingham.

Cardiff.—For the erection of the superstructure of a new pavilion in Cardiff Arms Park, for the Joint Committee of the Cardiff Cricket and Football Clubs. Messrs. Veall & Sant, architects, Cardiff:—

Boulton & Paul, Norwich £2,135 0 0

H. Gibbon 2,100 0 0

Symonds & Co.	£2,664 74 0
W. Harbrow, London	2,050 0 0
W. Thomas & Co.	2,049 0 0
Knox & Wells	2,010 0 0
Melhuish Brothers	1,989 0 0
Gibson Brothers*	1,981 0 0
* Accepted. [Rest of Cardiff.]	
Gosport. —For erecting depot for Gosport and Fareham electric tramways at Hoeford, for the Provincial Tramways Co., Ltd. Mr. John Glenn, C.E., architect, 11, Queen Victoria Street, E.C., and Gosport:—	
Estimate No. 1.—Power station.	
S. Salter	£6,610
H. Jones	5,530
J. Croad	6,400
W. Ward	6,074
Evans & Sons	5,983
H. C. Sweetland*	5,435
M. Coltherup	5,365
M. Quick	5,300
J. Crockerell	5,270
F. Corke	5,139

Estimate No. 2.—Car-shed.	
F. Corke	£3,819
W. Ward	3,805
S. Salter	3,800
H. Jones	3,798
Evans & Sons	3,779
J. Crockerell	3,725
J. Croad	3,700
M. Quick	3,620
M. Coltherup	3,433
H. C. Sweetland*	3,275
Estimate No. 3.—Workshops.	
H. Jones	£1,552
S. Salter	1,495
J. Croad	1,450
J. Crockerell	1,383
Evans & Sons	1,372
W. Ward	1,346
M. Quick	1,345
F. Corke	1,282
M. Coltherup	1,275
H. C. Sweetland*	1,060
* Accepted. [Continued on p. xviii.]	

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THE INTERMEDIATE EXAMINATION on the 7th, 8th, 9th, and 10th JUNE, 1904. Applications must be sent in on or before the 30th APRIL, 1904.

THE FINAL AND SPECIAL EXAMINATIONS from the 24th JUNE to the 1st JULY, 1904. Applications must be sent in on or before the 28th MAY, 1904.

The testimonies of study, &c., with the necessary fees, must accompany the applications, all of which are to be addressed to the undersigned.

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Educational—cont.

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April 22nd. Ordinary General Meeting at No. 9 Conduit Street, W., at 7.30 p.m. Paper by Mr. W. Gilbert on "Craftsmanship."

April 23rd. Sixth Spring Visit to the new War Office Buildings, Whitehall (opposite Horse Guards), by kind permission of Mr. Clyde Young. Members to meet at the building at 2.30 p.m.

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No guarantee is given that the lowest or any tender will be accepted.

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M. SIMON, Lieut. R.E.,
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41, Charing Cross, for Colonel
London, S.W. Commanding Royal Engineer,
12th April, 1904. Home District.

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See p. xxii for the Employment Register.

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TENDERS—cont. from p. xv.

Gosport.—For extensions to mineral water factory, for Messrs. Mumby & Co. Mr. W. H. Fry, A.M.I.C.E., architect, Gosport. Quantities by the architect:—
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Price Brothers, Cardiff £2,021 16 0
Lewis & Morgan, Tonyrefail 1,958 16 0
R. J. Mathias, Pontypridd 1,847 2 8
D. W. Davies, Cardiff 1,810 0 0
Barnes, Chaplin & Co., Cardiff 1,805 9 7
J. Morgan, Pontyclun 1,793 19 5
H. S. Rendell, Barry 1,723 7 11
F. Ashley, Cardiff 1,652 17 11
G. Rutter, Barry 1,640 3 3
Burton & Ringham, Cadroxton, Barry 1,596 16 10
J. E. Evans,* 233, Inverness Place, Cardiff 1,553 3 0
* Accepted. [Engineer's estimate £1,725]

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C. Deering & Son 3,259 0 0
F. G. Minter 3,193 0 0
J. Mowlem & Co., Ltd. 3,180 0 0
B. E. Nightingale 3,145 0 0
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Speechley & Smith 3,075 0 0

C. P. Roberts £3,070 0 0
W. H. Lorden & Son 3,049 0 0
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Wilkinson Brothers 3,008 0 0
Rowley Brothers 3,020 0 0
J. Chessum & Sons 2,998 0 0
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Leslie & Co., Ltd. 2,955 0 0
C. Ansell 2,950 0 0
J. Willmott & Sons 2,928 0 0
L. Whitehead & Co., Ltd. 2,924 0 0
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Cowley & Drake 2,882 0 0
Aldridge & Son 2,870 0 0
F. Willmott,* Ilford 2,829 0 0
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W. Reason, Clerkenwell .. 13,396 90 0 0
Foster Brothers, Norwood .. 12,950 50 0 0
Spencer, Santo & Co., Westminster .. 12,851 136 0 0
T. W. Heath & Son, Kensington .. 12,622 109 0 0
J. G. Baker & Son, Barnsbury .. 12,537 50 0 0
W. J. Renshaw, Putney .. 12,475 100 0 0
Leslie & Co., Ltd., Kensington .. 12,449 78 0 0
Crompton Brothers, Ltd., Epsom .. 12,350 — — —
B. E. Nightingale, Lambeth .. 12,280 72 0 0
W. Wallis, Balham .. 12,232 83 0 0
J. Burges & Son, Wimbledon .. 12,145 28 8 0
C. Deering & Son, Islington .. 11,987 — — —
J. Ferguson & Co., Tottenham .. 11,460 169 0 0
Cowley & Drake, Willesden Green* 11,002 — — —
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(Continued on p. xx.)

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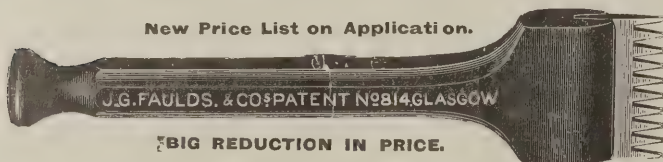
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TENDERS—cont. from p. xviii.

Leicester.—For extension of machine shop, for Messrs. Taylor & Hubbard, crane makers. Messrs. Tait & Herbert, architects, Leicester and Coventry:—

Builders' work.

Hardington & Eliot	£1,239
J. E. Johnson & Son	1,236
Freer	1,190
Tyers & Yates	1,150
J. O. Jewsbury	1,085
Bowles & Son	1,065
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Gimson & Co, Ltd.	1,139
E. Wood, Ltd.	1,103
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* Accepted.

Portsmouth.—For alterations and additions to the Empire Palace of Varieties (first section). Mr. W. H. Fry, A.M.I.C.E., architect, Gosport. Quantities by the architect:—

W. Ward	£1,290	0	0
Light & Son	1,233	0	0
Croad & Son	1,210	0	10
Clark & Son	1,195	0	0
Tubb & Son	1,150	0	0
S. Salter	1,149	0	0
J. Crockerill	1,145	0	0
H. Jones	1,097	0	0
M. Coltherup	1,075	0	0
F. Corke*	1,048	0	0

* Accepted. [All of Portsmouth]

Woburn Sands (Beds).—For two pairs of villas, Weathercock Lane, for Messrs. H. G. Fisher & Son. Mr. W. B. Stonebridge, architect, Woburn, R.S.O.:—

W. T. Sharpe	£1,615	15	0
G. Botsford	1,460	0	0
C. Sinfield	1,431	5	9
M. Fleet	1,402	10	0
H. Gregory,* Woburn	1,184	0	0

* Accepted.

Coming Events.

Wednesday, April 20.

GLASGOW ARCHITECTURAL ASSOCIATION.—Mr. A. Hessel Tiltman, F.R.I.B.A., on "Baths and Wash-houses," at 8 p.m.

SOCIETY OF ARTS.—Mr. Mervyn O'Gorman, M.I.E.E., on "Motor Cars for Popular Use," at 8 p.m.

INSTITUTE OF SANITARY ENGINEERS.—Extraordinary General Meeting at 4.30 p.m.

SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part II.).—Mr. E. Petronell Manby, B.A., M.D., on "The Appearance and Character of Fresh Meat—Organs, Fat, Blood; Fish, Poultry, Milk, Fruit, Vegetables and other Food; Preserving and Storing Meat and other Foods," at 7 p.m. Inspection and Demonstration at Harrison & Barber's Knacker Yard, Winthrop Street, Whitechapel, E., at 3 p.m., conducted by Mr. H. King Shaw.

CHEMICAL SOCIETY.—Ordinary Meeting at 5.30 p.m.

BRITISH ARCHAEOLOGICAL ASSOCIATION.—Mr. A. Denton Cheney, F.R.H.C., on "Shepway Cross," at 8 p.m.

BUILDERS' FOREMEN AND CLERKS OF WORKS' INSTITUTION.—Quarterly Meeting of the Members at 8 p.m.

EDINBURGH ARCHITECTURAL ASSOCIATION.—Presentation of Prizes in Associates' Section. Election of Office-Bearers for Ensuing Session. Mr. A. Hunter Crawford, F.R.I.B.A., on "The Statutory Qualification of Architects," 8 p.m.

Thursday, April 21.

INSTITUTE OF CIVIL ENGINEERS ("James Forrest" Lecture).—Mr. Dugald Clerk, M.I.C.E., on "Internal Combustion Motors," at 8 p.m.

SOCIETY OF ARCHITECTS.—Mr. A. R. Calbraith, A.M.I.C.E., on "The Cottancin System of Armoured Construction," at 8 p.m.

SOCIETY FOR THE ENCOURAGEMENT OF THE FINE ARTS.—Sir Wyke Bayliss, F.R.B.A., F.S.A. &c., on "In the House of Her Friends: Art in relation to the Sanitary Condition of Great Cities," at 8 p.m.

ROYAL INSTITUTION.—Professor Dewar on "Dissection"—II., at 5 p.m.

INSTITUTE OF MINING AND METALLURGY.—Discussion on "The Equipment of Laboratories for Advanced Teaching and Research in the Mineral Industries," at 8 p.m.

COMPETITION REFORM SOCIETY.—General Meeting, 9, Conduit Street, W., at 6 p.m.

Friday, April 22.

ARCHITECTURAL ASSOCIATION.—Mr. W. Gilbert on "Craftsmanship," at 7.30 p.m.

SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part II.).—Mr. E. Petronell Manby, B.A., M.D., D.P.H., on "The Hygiene of Byres, Lairs, Cowsheds, Slaughter-Houses, &c.," at 7 p.m.

INSTITUTE OF CIVIL ENGINEERS (Students' Meeting).—Mr. A. Trewby, B.A., on "No. 2 River-Pier of the Beckton Gasworks," at 8 p.m.

Saturday, April 23.

ARCHITECTURAL ASSOCIATION.—Sixth Spring Visit. EDINBURGH ARCHITECTURAL ASSOCIATION.—Visit to Glasgow under the auspices of the Glasgow Architectural Association.

SOCIETY OF ANTIQUARIES OF LONDON.—Anniversary Meeting at 2 p.m.

ROYAL INSTITUTION.—Mr. Cyril Davenport, F.S.A., on "Cameos," at 3 p.m.

INCORPORATED ASSOCIATION OF MUNICIPAL AND COUNTY ENGINEERS.—Eastern District Meeting at Great Grimsby.

BRITISH INSTITUTE OF CERTIFIED CARPENTERS.—Visit to Messrs. Walker & Co's Lead Works, Belvedere Road, S.E., at 3 p.m.

Monday, April 25.

SOCIETY OF ARTS (Cantor Lectures).—Prof. R. Langton Douglas, M.A., on "The Majolica and Glazed Earthenware of Tuscany," at 8 p.m.

SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part II.).—Mr. E. Petronell Manby, B.A., M.D., on "The Laws, By-laws and Regulations affecting the Inspection and Sale of Meat and other Articles of Food," at 7 p.m.

Tuesday, April 26.

SOCIETY OF DESIGNERS.—Mr. Starkie Gardner, F.S.A., on "Lead Architecture," at 8 p.m.

Wednesday, April 27.

ARCHITECTURAL ASSOCIATION (Discussion Section).—Mr. R. Crawford Smith on "The Advantages of a Provincial versus a London Training," at 7.30 p.m.

SANITARY INSTITUTE (Inspections and Demonstrations for Sanitary Officers, Part II.).—Inspection and Demonstration at the Metropolitan Cattle Market, York Road, N., at 2 p.m., conducted by James King, M.R.C.V.S.

Thursday, April 28.

SOCIETY OF ANTIQUARIES.—Meeting at 8.30 p.m.

ROYAL INSTITUTION.—Professor Dewar on "Dissection"—III., at 5 p.m.

Friday, April 29.

ROYAL INSTITUTION.—Dean Robinson on "Westminster Abbey in the Early Part of the Seventeenth Century," at 9 p.m.

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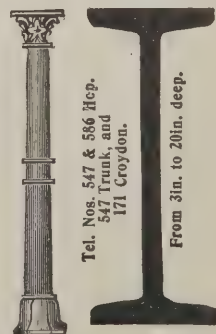
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For "Too Late for Classification" see page xvii.

SPECIFICATION is now in its seventh year, and maintains its vitality unchecked. The bulk increases steadily, and the contents are as up-to-date as careful and detailed revision can make them, while the classification is as clear and systematic as ever, and the electrical sections are particularly careful and thorough. Architects and builders may be able to get on without this volume, but we cannot commend their wisdom who elect to do so.

—*Electricity*, April 15th, 1904.

BUILDERS' JOURNAL

AND ARCHITECTURAL RECORD.

April 27, 1904. Vol. 19, No. 481.

6, Great New Street, Fetter Lane, E.C.

Summary.

The Cottancin system of armoured construction, named after its inventor, an eminent French engineer, employs steel wire in combination with concrete and hollow bricks. There is an example of it in St. Sidwell's Wesleyan Church at Exeter, which Mr. A. R. Galbraith, A.M.I.C.E.I., describes as an instance of daring construction absolutely unique amongst both ancient and modern work. For daringness it quite equals that of the Church of St. Jean de Montmartre, Paris, which has not been inaptly called by the Americans "The Folly of the Century" because of the unparalleled boldness of its design and the minimum proportions to which its component materials are constructionally reduced. A remarkable series of tests was carried out with great success on the San Marino pavilion at the Paris Exhibition, constructed on the Cottancin system. (Page 196.)

Despite the unfairness of the conditions, fifty-eight sets of drawings were sent in for the Malvern free library competition. Mr. H. A. Crouch, A.R.I.B.A., of London, was awarded the first premium. (Page 205.)

A photographic survey of Sussex is proposed. (Page xiii.)

In view of the various unsatisfactory competitions for Carnegie libraries, the Council of the R.I.B.A. wrote to Mr. Carnegie suggesting that he should insert in his future deeds of gift a condition that if the beneficiaries contemplated instituting a competition this should be conducted according to the Institute's "Suggestions." Mr. Carnegie gave a curt refusal. (Page 206.)

At the annual dinner of the Society of Architects held last Friday evening Mr. Walter W. Thomas, the president, said they awaited with some interest the report of the Institute committee on architects' registration, as on it would probably depend the future action of the Society in regard to the matter. (Page 205.)

Speaking of registration last week, Mr. A. Hunter Crawford, past-president of the Edinburgh Architectural Association, said there were three classes of architects in favour of it—those who believed they themselves and the public would benefit by it; those who urged that their business would be improved; and those who believed the proposal should be accompanied by a scheme of examination and education. Mr. Crawford said that he was not sufficiently sure of the advantage of making any effort to alter the present position, but he was more favourably inclined towards statutory examination than he was a year ago. (Page 206.)

In a paper on craftsmanship, read before the Architectural Association last Friday, Mr. Walter Gilbert recalled the use of an electric-driven tool by means of which much beautiful silver work was done by Professor Herkomer and the band of craftsmen associated with him. (Page 201.)

Architects' Registration. At the last meeting of the Royal Institute Mr. Aston Webb, R.A., the president, referred to a circular which had been issued by a self-appointed body asking for the opinion of the members on the question of registration. Mr. Webb pointed out that an official committee was at present considering the question and this committee had (wisely, we think) decided not to prejudice the matter by a circular before they had properly considered the pros and cons. This self-appointed body however, styled "The London Committee of the Members of the R.I.B.A. for Promoting the Statutory Qualification of Architects," have elected to put their hand through the hedge, and truly the serpent has bitten them; Mr. W. H. Seth-Smith (their vice-chairman) and Mr. E. W. Wimperis and Mr. E. Guy Dawber (two other members of the Executive Committee) having resigned in consequence of the circular, about the issue of which they appear to have been ignorant. We have no quarrel with these three gentlemen, for they are worthy advocates of registration and have shown their good sense in resigning from a body of which they were not prime movers. The formation of such a body was not desirable while an official committee was considering the question, and the issue of such a circular as that in question was certainly in very bad taste. We are glad to see therefore that this precious little clique of self-advertisers are receiving their quietus. It is interesting to know the composition of this "London Committee"; the members in addition to those resigned are:—Mr. J. S. Gibson, chairman; Mr. George Hubbard, vice-chairman; Mr. W. Gillbee Scott, hon. secretary; and Messrs. H. T. Bonner, A. W. S. Cross, A. R. G. Fenning, W. E. Hewitt, C. E. Hutchinson, H. H. Langston, C. E. Mallows, G. A. T. Middleton, H. A. Saul, Prof. R. Elsey Smith, Butler Wilson and E. Woodthorpe. Some are entitled to consider themselves pioneers in the registration movement, but most have no claim and are merely pushing themselves forward and posing as leaders. They call themselves the "Executive Committee" and have ventured to ask others, better qualified than many of themselves, to join a general committee. The circular, which is issued with a display and plentiful duplication of the name of the hon. secretary on it, calls attention to an enclosed pamphlet embodying a few reasons for statutory qualification, and a voting form, stating that in the view of the "Executive" the principle of examination now in force for the Association should be made compulsory for all who intend to enter the Profession in the future, declaring that almost the whole of the professional societies allied to the Institute

are in favour of the principle and that the committee believes there is a large majority in the R.I.B.A. in its favour also. They state that those returning the form in voting for statutory qualification do not commit themselves to any particular Bill, that no Bill is before them, nor is one under consideration, but that it will have to be prepared and promoted by the R.I.B.A.; and the pamphlet goes further to gain a snap decision by putting the matter in this very one-sided manner. The committee have quite spoiled themselves by circulating it.

St. Mary Aldermanbury. The parishioners of St. Mary Aldermanbury did well last week, for by 29 votes to 2 they rejected the Bishop of London's wretched proposal to unite the benefice with that of St. Lawrence Jewry and St. Michael Bassishaw, which would mean of course the demolition of this Wren church. A similar proposal fell through in June, 1872, and again in October, 1897, when the project was defeated by 87 votes to 39; and we hope that if on a future occasion any other over-zealous ecclesiast has designs on the building he will be met with as blunt an answer as that which the Bishop of London received last week.

A Fresh Discovery at Thebes. M. EDOUARD NAVILLE and Mr. H. R. Hall announce in the "Times" the discovery of the most ancient temple at Thebes. This has been uncovered to the south of the beautiful temple erected by Queen Hatshepsu and belongs to the eleventh dynasty (B.C. 2500). Ordinary archaeological reports of excavations are generally dull reading, but this one, coming from the two workers on behalf of the Egypt Exploration Fund, is supplemented by some very interesting remarks. The temple is in an unexpectedly good state of preservation, and its aspect forces us to modify various speculations which have been made with regard to the origin of the peculiar style in which the great temple of Hatshepsu was built. One of the greatest charms of this latter is the unconventionality of its design, with its ramps from court to court, its colonnades on either side, and its simple "proto-Doric" columns. Hitherto this design has been unparalleled in Egypt, and various theories have been propounded to account for it: but we are now assured that Hatshepsu's architects simply imitated and enlarged upon the design of the older temple of Mentuhotep and for some reason they chose, instead of building in the style of their time, to imitate an eleventh-dynasty temple; so that the great temple was simply a magnificent piece of archaism.

THE COTTANCIN SYSTEM OF ARMoured CONSTRUCTION.*

By A. R. GALBRAITH, A.M.I.C.E.I.

THE development of concrete steel has of recent years been simply phenomenal, especially on the Continent and the United States of America. The reason why I have selected this system out of some 200 different ones extant is because it has demonstrated its marked superiority in the domain of architecture, the nature and arrangement of its materials permitting a far greater latitude for obtaining decorative and constructional effects than can be obtained in ordinary practice.

The system is named after its inventor, M. Paul Cottancin, an eminent French engineer, and was initiated by him in the year 1889; it is therefore one of the oldest systems in France: since then it has been employed extensively in the United States, Portugal, Belgium and other countries. It was first introduced into England in 1902 by Mr. Arthur Vye-Parminster, an English architect practising in Paris, it being used in the erection of St. Sidwell's Wesleyan Church at Exeter, and other places that will be described later, from which it will be seen that it is not only applied to buildings in their entirety, but also to bridges, tanks, aqueducts and other numerous forms of engineering construction.

The cement used should be Portland of the highest class, slow-setting, of a true blue or greenish-grey colour, and of good age. It should be very frequently tested, and any failing to reach the requisite standard must be unhesitatingly rejected. The advantages of a finely-ground cement, *ceteris paribus*, cannot be over-estimated, and it is now possible to obtain cement which will leave on a sieve of 32,000 meshes per sq. in. a residue not exceeding 9 per cent. The results of some compression tests made with concrete in the proportion of 5 to 1 with this cement and a coarser cement which left a residue of 4 per cent. on a sieve of 5,800 meshes per sq. in. showed that after 21 days the former gave 180 tons per sq. ft. against the latter's 103; after 42 days, 245 tons against 164; while after 56 days the former gave 252 tons per sq. ft., a result which will show a favourable comparison with granite. However, the usual grade is a cement which shall not leave a residue greater than 10 per cent. on a sieve of 5,800 meshes per sq. in., giving a tensile resistance of 400lbs. per sq. in. after seven days' and 500lbs. after 28 days' immersion in water.

Sharp coarse sand must be used, very gritty, and of different sizes, especially where impermeability is essential. The sand must be perfectly clean, and entirely free from earthy or argillaceous matter.

The aggregate should be good hard broken stone with a minimum of mica, or gravel and ballast of various sizes sufficiently small to pass through a sieve of $\frac{3}{8}$ in. mesh. The same remarks as to cleanliness, &c., apply as with sand. No limestone, even of the hardest quality, must be permitted in fire-resisting work.

The proportion generally used for the mortar for jointing the brickwork, filling the holes in the bricks and forming the upper and lower surfaces of the trellis panels is 1 of cement to 3 and occasionally 4 of sand. This mortar should almost have the liquid consistency of a grout to facilitate its passing into the perforations of the bricks and tiles and the interspaces between the wiring of the reinforcement. The concrete used is generally proportioned at 4 and 5 to 1, and 3 to 1 for work that has to withstand the percolating action of water.

According to Prof. Ira O. Baker, good concrete can be strengthened nearly 10 per cent. by prolonged trituration and attrition of its constituents, and recent experiments have demonstrated the superiority (quite 18 per cent.) of mechanically-mixed concrete over that which has been hand-mixed. Where it is mixed by hand it is well to increase the proportion of cement by $\frac{1}{2}$ cwt. to $6\frac{1}{2}$ cwt. It is important that it should be in a plastic or viscous condition. It should be used fresh, in small quantities at a time, and well rammed and punned until the moisture is evenly distributed. The concrete should not be too liquid, because, if so, its compressional resistance is weakened, accompanied by cracks during setting; should it be the reverse, its proper setting will be proportionately affected. Another method is to gauge the aggregate, filling its interstices accordingly; then adding a concrete mortar, say, 1 of cement to 2 of sand, with a margin of about 10 per cent. for faulty mixing.

One of the features of this system is the armoured brickwork (*briques armées*). Good, hard, sound, specially-made bricks, vertically perforated with square holes, are generally used in two sizes— $8\frac{3}{4}$ in. by $3\frac{3}{4}$ in. by $2\frac{3}{4}$ in. with four holes, and $8\frac{3}{4}$ in. by 3 in. by $4\frac{1}{2}$ in. with eight holes. The area of the former (which was used in the pavilion of the Republic of San Marino) is $20\frac{1}{2}$ sq. in., this being made up of $14\frac{1}{2}$ sq. in. for the solids and $5\frac{3}{8}$ sq. in. for the voids (see Fig. 16, on p. 198). Tiles of a similar character are made for light partition work, &c. The brick and tile work is invariably executed in the stretching or "chimney" bond.

Rolled steel wire of circular section is employed for reinforcing the brickwork and forming the meshing for the slabs or trellis panels. Flat steel bars of the following dimensions are used for the top and bottom flanges of the ribs and beams, and for anchoring the steel wire under the bottom courses of the brickwork:—

1.	Bars of the best weldable steel	-	$1\frac{5}{8}$ in. by $\frac{1}{4}$ in.
2.	do.	-	$1\frac{1}{2}$ in. " $\frac{3}{8}$ in.
3.	do.	-	$1\frac{1}{2}$ in. " $\frac{7}{16}$ in.
4.	do.	-	$1\frac{1}{2}$ in. " $\frac{9}{16}$ in.
5.	do.	-	$1\frac{1}{2}$ in. " $\frac{5}{8}$ in.
6.	do.	-	$1\frac{1}{2}$ in. " $\frac{11}{16}$ in.

The sizes generally used are Nos. 1, 3, 4 and 5. This steel should be ductile, with a coefficient of elasticity not exceeding 30. Siemens-Martin is preferable to Bessemer on account of its purer and more uniformly good quality.

Where concrete work has been discontinued before the completion of the structure, the surface of the old work must be well serrated with a cutting tool and cleansed from all foreign matter before resumption. Pure fresh cement-grout must then be poured over the surface of the work before commencing, care being taken to well pun the old work to the new in order to form an efficient bond. All concrete and cement should be used up before work is suspended; on no account must any that remains be used again. Fresh concrete work should be freely watered for some days, or, failing this, should be maintained in a moist condition by a good blanket of wet sand, especially if exposed to the action of the sun or other heat. Large surfaces of concrete exposed to the vicissitudes of the atmosphere should have expansion joints to allow for expansion and contraction. No centres, moulds, props and struts or other scaffolding should on any account be struck until the concrete has sufficiently set, and no load should be placed on a green floor. The moulds and shuttering are generally removed after a few days, but it is advisable to allow at least a month to elapse before entirely removing the temporary supports, when the structure will be ready for the tests. The foregoing remarks apply to concrete work only; the scaffolding for the brickwork,

besides being much lighter than that used for ordinary brickwork, can be struck as necessary as the works proceed.

The metallic ossature is composed of a reticulation or, more correctly speaking, a basket-work of steel wire (usually No. 7 B.W.G.) of varying mesh corresponding to the different loads the finished structure will have to sustain—the general rule being the heavier

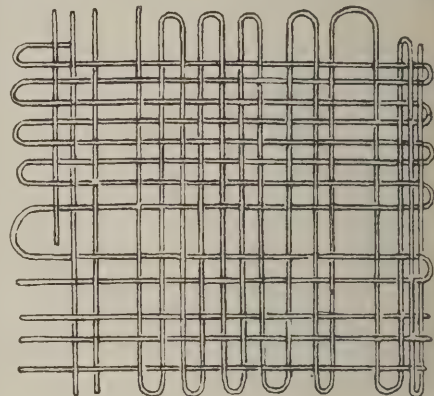


FIG. 1

the load the smaller the mesh. It was found however that the closeness of this meshing presented difficulties, as it was apt to prevent the concrete from completely filling the interstices; to obviate this it was deemed advisable to increase the diameter of the wiring at the points of heaviest loading, instead of reducing the size of the mesh as hitherto. The manufacture of this meshing can soon be acquired by a workman

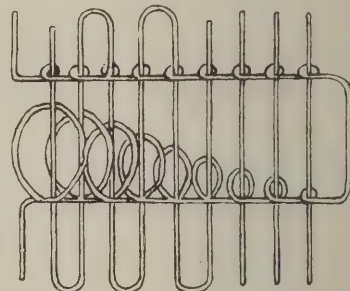


FIG. 2

of ordinary intelligence, although special machinery has now been devised for its preparation. The whole of the wiring in every part of a structure constructed on this system is intimately connected up and interwoven with the object of an equable distribution of the various stresses, so to form an homogeneous whole. Fig. 1 shows the trellis reinforcement and Fig. 9 (p. 198) the continuous skeleton on this method.

Foundations.

These are formed in caisson work of the inverted box type, divided up into cellular compartments, and as a substitute for piling have proved remarkably economical and effective, especially with fluid subsoils, such as various kinds of river alluvium. At Tunis, where the rebuilt portion of the modern town is close to the harbour (occupying the site of an ancient lagoon, the silt of which in places attains a depth of over roof.), it was found by experiment that ordinary foundations were only capable of bearing a load between 31lbs. and 32lbs. per sq. ft. without irregular subsidence, whereas the Cottancin raft sustained a super. load of 777lbs. per sq. ft. with only 0.008 in. of uniform subsidence. This load was afterwards increased to 17 per cent. beyond the official maximum, equalling 1,711lbs. per sq. ft., the sinking even then only amounting to $1\frac{3}{16}$ in. and being still symmetrical; and it was only on increasing this load by 100 per cent. beyond the official maximum that signs of unequal settlement became manifest.

* A paper read before the Society of Architects on April 21st, 1904.

These foundations are very suitable for engine beds and other machinery where the non-transmission of vibration is a desideratum.

Floors and Ceilings.

M. Cottancin here utilizes a system of beams and ribs called by him *épines contreforts* (spine reinforcement). Fig. 3 is a



FIG. 3

section through same where the concrete is framed about a metal skeleton placed on edge to obtain the greatest bending resistance. The wires of these beams project sufficiently to be interwoven and connected to those of the horizontal network of the floors and walls, both above and below, so as to obtain the greatest solidarity and immobility. This arrangement can be compared to a kind of lattice (see A, B, C, D and $\alpha, \beta, \gamma, \delta$, Fig. 4),

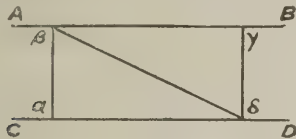


FIG. 4

its upper and lower members being connected uninterruptedly by flat diagonals; α, β being in compression are replaced by the mass of concrete, while γ, δ being in tension are replaced by the wiring of the reinforcement. These beams are as a rule 1 1/4 in. deep and 2 in. to 4 in. wide; they are also provided with lower flanges (A, B, Fig. 5) intended to

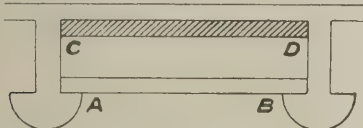


FIG. 5

carry the light slabs of reinforced concrete comprising the ceiling. These beams and ribs are frequently made on the ground and hoisted bodily into place, intersecting one another as shown in Fig. 6, some parallel to

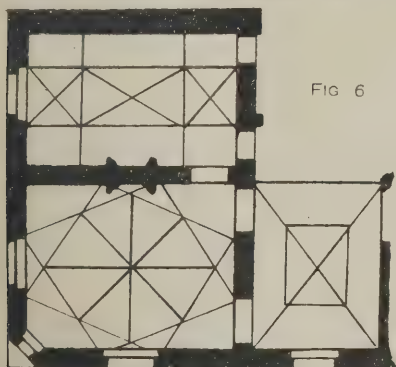


FIG. 6

the walls and others diagonal, forming an agreeable and artistic arrangement for decorative purposes. Some of the beams 1 1/4 in. by 4 in. in cross-section have been used to support floors of more than 39 ft. span. The ceiling slabs are moulded prior to erection, and shaped to fill the interspaces between the beams. They are generally struttup against the underside of the floor by small props in the position c, d, Fig. 5, being lowered and fixed in their proper position A, B, Fig. 5, as soon as the concrete has properly set in the superincumbent flooring; sometimes, as an alternative, ordinary shuttering is substituted. The floor reinforcement is then prepared *in situ* (or added previously formed as already mentioned) and inter-

woven with or attached to the loops left in the ossature of the beams and walls for this purpose. Care should be taken when the ceiling slabs are used as centres for the flooring that their upper surfaces are suitably prepared by a layer of oiled paper or otherwise, to prevent them adhering to the underside of the floor. Floors are usually 2 in. thick, the network being arranged about 1 in. above the bottom of the slab at the sides, and woven prior to concreting. This network or trellis has also a distinct sag towards the centre of the span, which slightly increases the strength of the slab. These floors are of ample strength when the spaces do not exceed 3 ft. 6 in., if wiring 1/8 in. thick is used and the total thickness of the mass is 1 1/4 in. Some tests carried out by the French War Department and by committees of the "Ponts et Chaussées" have proved that great strength is obtained by this system. In one instance two slabs were tested, one reinforced and the other of concrete *in toto*. The dimensions of these slabs were 1 metre carré (about 3 ft. 3 3/4 in. square) and about 1 1/4 in. thick. The reinforced slab supported a distributed load of 2 3/4 tons with nearly 1/8 in. deflection before collapsing gradually, while the plain one with only a distributed load of a little more than half a ton suddenly gave way.

Walls and Partitions, Columns, Roofs, &c.

The question of the construction of walls and partitions has been ingeniously solved by M. Cottancin. Concrete itself is not entirely suitable for vertical partitions, as the softness of the fresh material and the difference in density between the sand and cement hardly permit the forming of a thoroughly homogeneous mass. M. Cottancin therefore utilizes hollow bricks and tiles as previously described in combination with the metallic reinforcement. The reinforcing wires are passed through the vertical perforations in the bricks and fastened to the horizontal flat bars along the top and bottom bed joints (Fig. 7). For external walls the bricks are arranged on the double cellular system, and as soon as the reinforcement is in position the perforations are filled up with cement grout for the purpose of fixing and protecting the wiring. Walls of the façades of houses five and six storeys high have been erected on this system, with double walls of brick each about 3 in. thick, and as an instance of the extraordinary adaptability of this method of brickwork reference should be made to Fig. 10 (St. Sidwell's, see p. 200).

Concrete arches are formed with a metallic armature resembling that of the ribs and beams, and when constructed in brickwork the reinforcing wires are carried through in a similar manner to, and connected with, that of the walls.

When the columns are constructed in concrete they are reinforced with a continuous metallic cincturing of steel wire about 1/8 in. diameter applied helicoidally close to the outer circumference, and spaced 1/8 in. to 1 in. centre to centre. Piers and pillars as well as columns are generally erected in brickwork, with the vertical armature previously

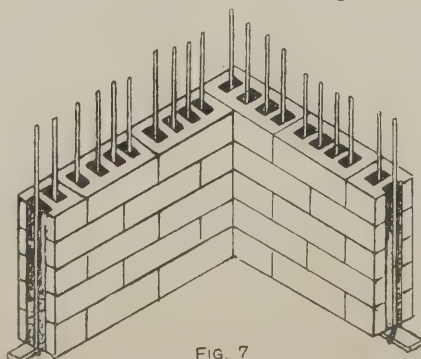


FIG. 7

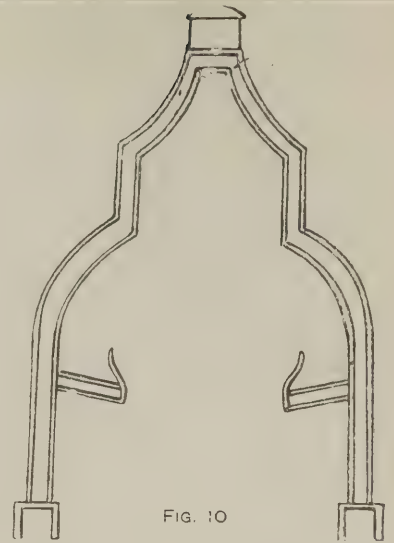


FIG. 10

shown for walls. The vertical bars are introduced to increase the resistance of these members to lateral flexure, and they offer great resistance to oblique strains. It may be taken as a general rule that armoured-concrete columns should not exceed twenty-seven times their diameter in height without bracings.

Ordinary roofs are formed with a double slope of reinforced concrete and a similar ceiling, each with a connecting reinforcement, this constituting a series of lattice beams, as A, B, C, D, E, F, Fig. 8. Light rafters are then placed upon the supports, carrying a roofing of zinc or other material. In Mansard roofs the entire complication of framework or truss construction is eliminated. Dormers and skylights can be constructed in such roofs without the slightest danger of any weakening of the completed structure. Arched roofs of small rise have the roof and ceiling slabs carried on curved and longitudinal intersecting ribs, two methods of

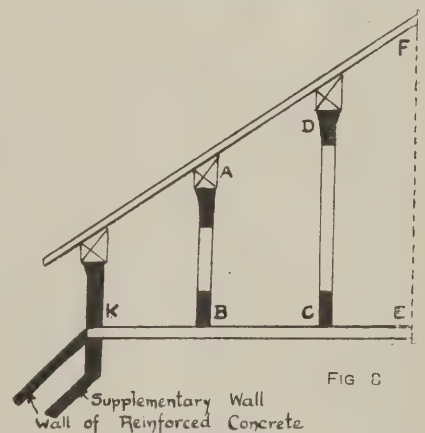


FIG. 8

such an arrangement being shown in Fig. 9. Little rise is given to these ribs—in one instance a roof of 59 ft. span only having a rise of 16 in., and another one of 46 ft. span having a rise of 14 in. These arched beams or ribs are also frequently made of reinforced brickwork.

A great many domes and similar forms of roof construction have been erected on this system, notably one at the Chateau Orfrasière. This dome is 52 ft. in diameter at a height of 125 ft. above the ground, and is supported on 18 in. by 18 in. reinforced brick piers.

A number of chimney stacks have been built according to this method. One at the works at Montreuil is 100 ft. high, wall 3 in. thick, supported on caisson foundations. The advantages claimed for these shafts is that they are 40 to 50 per cent. cheaper than those in ordinary brickwork, and are lighter and stronger, offering much greater resistance

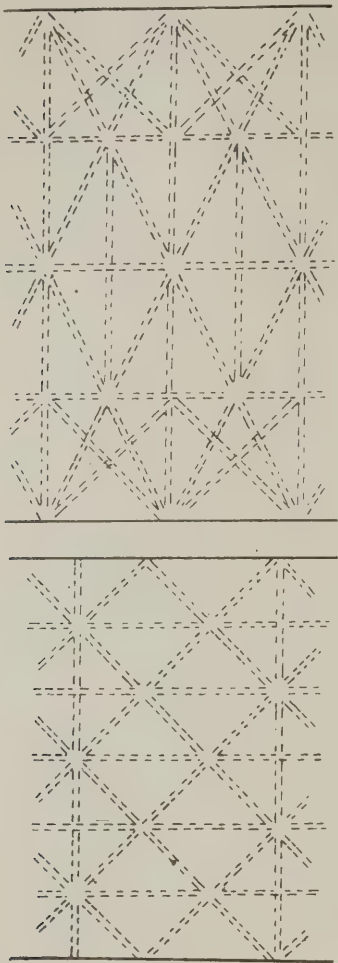


FIG. 9

to wind-pressure. No firebrick lining is absolutely necessary, M. Cottancin claiming that the reinforced cement-filled brick will resist any temperature to which these stacks are likely to be submitted. As an instance of this, a great number of brick and lime kilns without any firebrick lining have been constructed by M. Cottancin, and have been in use for a considerable time with perfectly satisfactory results. When the firebrick lining is desired it is carried up to the required height in the ordinary manner. Lightning conductors are also dispensed with; the steel reinforcement sufficing if attached to a copper corona placed at the summit. Heavy and expensive concrete foundations are not required, being replaced by the reinforced brick caisson work.

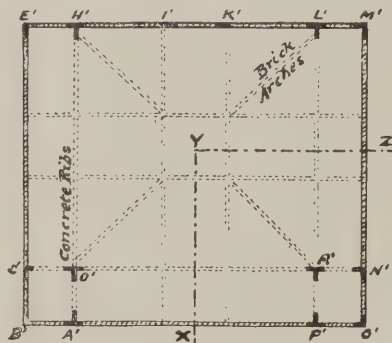
Bridges, reservoirs, tanks, engine beds, boiler settings and other forms of engineering construction have been erected with considerable success on this system. A highway bridge at Hirson in the North of France was constructed with foundations formed of short cylinders of steel-cored cement-concrete driven by hand into the mud at the side of the stream. These cylinders were filled with gravel, and formed the supports for the steel-cored cement panels which composed the platform on which were placed the steel-

cored beams 14 in. deep and 2½ in. wide, carrying the 2 in. cored concrete panels forming the roadway. This reinforcement is carried throughout the whole structure, which was tested with rolling loads up to 16 tons without showing any permanent set. A reinforced brick rainwater tank was built at Newark-on-Trent for Messrs. Simpson & Co. The walls were 4½ in. thick on a brick caissoned foundation. Its cost was 5d. per ft. cube, against an estimated cost of 2s. 4d. in ordinary brickwork. The caissoned brick foundation bed and the boiler settings for the new heavy boilers at the pumping station on Duck Island, St. James's Park, London, S.W., were also executed on this system for His Majesty's Office of Works. The cost of this work was 1s. 2d. per ft. cube, against that of 2s. 2d. for deep concrete foundations, which would otherwise have been absolutely necessary.

A Remarkable Series of Tests.

It has been truly said that destruction affords far more valuable lessons to the architect and engineer than its antithesis, and in this wise the following account of the various tests carried out on the fabric of the pavilion of the Republic of San Marino at the time of its demolition, soon after the closing of the Paris Exhibition of 1900, cannot fail to be a study of instructive interest.

This building was erected on the Cottancin system close beneath the Eiffel Tower. The pavilion itself was supported on caissoned foundations of metallic-cored brickwork, half-brick thick, open at the bottom, support-

FIG. 12
SECTIONAL PLAN
THROUGH B'O'M'E'

ing at 1 metre an armoured-concrete platform measuring 35 ft. 1½ in. by 30 ft. 2½ in. and 2½ in. thick. On this stood the structure itself, 39 ft. 4½ in. high. The building consisted of four groups of "key" counterforts or buttresses (Figs 12, 14, 15), namely: A, B, C, D, accommodating the stairway; E, H, I and K, L, M forming the angles of the back elevation, and N, R, P, O forming the turret (Fig. 15). Each of these groups comprised a section of cored brickwork having an area of 1,200 sq. centimetres (186 sq. in. equalling eight bricks). The weight of the structure approximated 120,000 kgs. (118½ tons). Therefore each group sustained about 30,000 kgs. (29½ tons), equalling 25 kgs. per sq. centimetre (355 lb. per sq. in.), or about 33 per cent. of the ultimate crushing resistance of the bricks, omitting the cores of cement-mortar. These counterforts were connected and braced together by horizontal courses of cored brickwork forming rectangular frames (Fig. 13) from 8 in. to 16 in. (20 to 40 centimetres) thick with the counterforts. At a height of 4.60 metres (15 ft.) above the platforms springing from the points H', L', R', D' (Fig. 13) were four flying arches in cored brickwork 3½ in. thick with a depth of 8½ in., which supported the central skylight at the

height of 12 metres (39 ft. 4½ in.) from the foundations. The central skylight at 13 metres (42 ft. 8 in.) received the ends of the bracing ribs of the flat roof, which were in armoured-concrete. With the armoured-concrete roof these ribs formed one piece. The points A, B, C, D, E, H, I, K, L, M, N, R, P, O were so braced together that the building erected on them formed a big cube incapable of deformation, attached to each group of supports by the 48

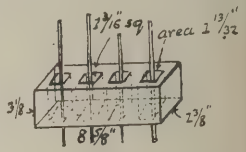


FIG. 16
FRENCH PERFORATED
Brick Area 20½ sq. in.
Voids 5⅞ " " " " " "
Solid 14⅞ " " " " " "

threads of metallic core (4.4 sq. millimetres or .17323 sq. in. in section equal to a total steel cross-section of 211.7 sq. millimetres (8.31 sq. in.); the weight per metre run of the steel wire being 0.112 kgs. (0.246 lbs.) and of the aggregate of each group of supports 5.5 kgs. (11.83 lbs.) and 22 kgs. (47.32 lbs.) per metre run in vertical height for the whole building itself weighing 118½ tons. Figs. 11, 12 and 14 otherwise sufficiently explain the nature of the building and its chief structural characteristics.

The arrangements for the wind-pressure tests were made by fastening a band of bar iron provided with rings round it, about 3 ft. below the flat roof, as shown at Q, Q' in Fig. 11. One 50-ton and three 15-ton movable cranes were utilized for the required pressure. The pull was exerted through wire ropes and

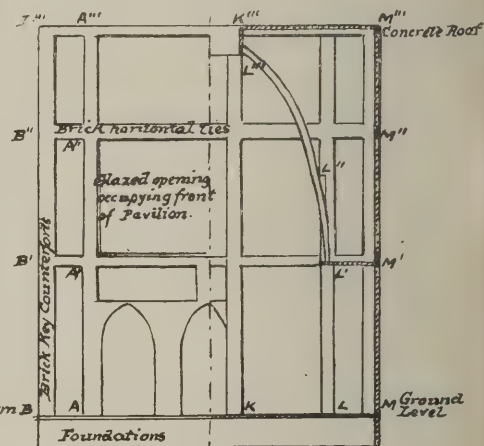


FIG. 14

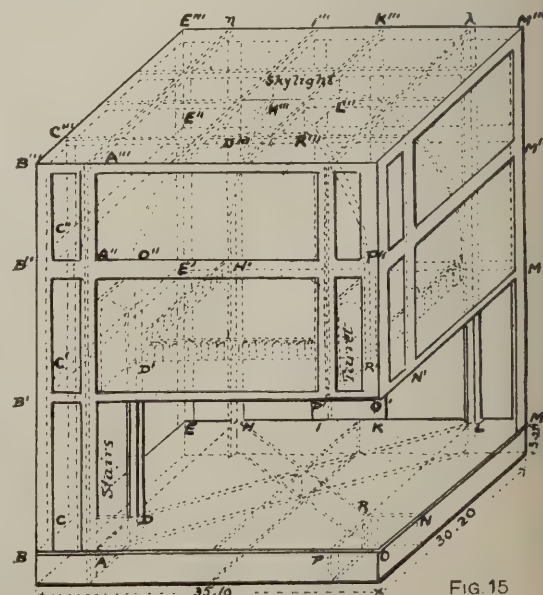
SECTIONAL ELEVATION
THROUGH X.Y.Z. (Fig. 12).

FIG. 15

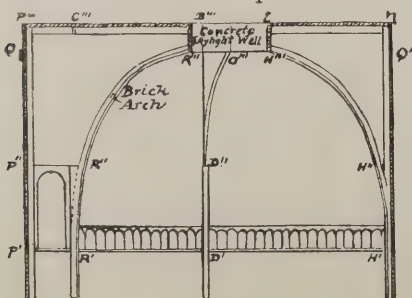
ISOMETRIC VIEW OF PAVILION WITH
SUPPORTS AT O REMOVED

FIG. 11. Section through P'Q'Y'H'

blocks fixed in such a position that the vertical components equalled one-half of the horizontal components at an angle of 30 degs., this being the angle of the pull. The band of bar iron was held at four points by flat bar hangers bent round the terrace, and attached to the skylight (as shown in Fig. 12). A horizontal component of 60,000 kgs. in the structure equalled a wind-pressure of 400 kgs. per sq. metre (82lbs. to the sq. ft.), 90,000 to 600 kgs. to the sq. metre (123lbs. to the sq. ft.). The maximum allowance according to French practice for wind-pressure on iron structures is 66½lbs. to the

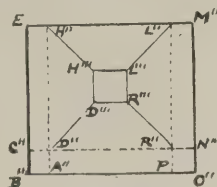


FIG. 13

sq. ft. (275 kgs. to the sq. metre), so that more than double this pressure was brought to bear upon this pavilion without any signs of flexure being evident under the careful scrutiny of a theodolite. When the pull at q (Fig. 11) was communicated through the iron girdle to q' the corner counterfort and flying arch would tend to be buckled inwards and the flat roof pushed upwards and outwards. The pull exercised at q in the direction of an angle of 30 degs. with the horizon as a horizontal component equals 90 tons and as a vertical component 45 tons. It is not easy to arrive at an estimate of the actual stresses arising in the building. The wall-plates were filled in with thin plates of plaster-of-Paris, which would assist in making the building resist as a complete beam, but to what extent it is impossible to prove, and providing this filling was eliminated the actual allocation of stress is an all but impossible problem, as the skeleton is not statically determinate. The only possible explanation of the exceptional resistance manifested throughout this structure to the various stresses, which according to ordinary construction were entirely disproportionate to the quantity of material involved, lies in the modifying conditions set up by the omnipresent tensional reinforcement of the metal.

A fire test was carried out with the object of demonstrating the damage that would occur to a building of this character from a powerful conflagration affecting it internally from top to bottom. To afford free scope to the fire throughout the interior a portion of the armoured-concrete flooring was removed between the ground and first floors: 22 cub metres (770 cub. ft.) of woodwork was arranged in five different centres, one against each angle of the rear of the building, one in the well of the staircase, another in the turret, and the fifth beneath the flat-topped roof on the first-floor flooring. The turret was utilized so as to act as a flue of a chimney stack to ensure a thorough draught. The fire in the staircase well was so violent that the newel of cored brickwork (8½ in. by 2 in.) was overbaked, and the brick portions were calcined, but this calcination was arrested at the cement filling of the perforations, which remained unaffected in spite of the water played upon it by the fireman's nozzles when they extinguished the fire. Exposed to the full action of the flames, the portions of cored concrete covered with "vassy" cement only suffered as far as the cement rendering. The Portland cement was not affected except on the treads of the staircase, where the heat had been so great that it had acquired the appearance of vitrified cement taken from the kilns. The glass in the centre skylight was melted, and the flames of the conflagration had played so fiercely against the roof at the full height of 12 metres that the plaster rendering of the ceiling was calcined. On a thorough examination of the structure the following day, all the damage was found to be only superficial. There were no cracks even between the brickwork and the plaster panels. The

walls of the turret, of plaster panels, had been momentarily forced out of shape by the expansion of the floors during the progress of the fire, but this had ceased, and these panels had already resumed their original shape.

Wrecking tests were started by undermining the supports of the turret at the corner *o* (Fig. 15). A battering ram was used made with a scaffold-pole 16 metres in length (52ft. 6in.) and weighing 700 kgs. (1,540lbs.), suspended by ropes so as to move freely in a horizontal direction and worked by eight men, the stroke being about 1 metre (3ft. 3 $\frac{3}{4}$ in.). With four or five blows 30 to 40 centimetres of the corner (12in. to 16in.) in vertical height were broken away. One-half the weight of the structure, or 59 tons by the readjustment of the equilibrium disturbed by the resulting settlement, was thereupon supported by 119 $\frac{1}{2}$ sq. in., and the cored brickwork which remained intact was subjected to a stress of upwards of 1,100lbs. to the sq. in. Thus one-half the building above the damaged corner formed a corbelled end of a beam of pyramidal shape (B.B'', M.M'', O.O''), whose height equalled half the diagonal distance across the building, whose vertical depth was 7.140 metres (24ft. 3 $\frac{3}{4}$ in.), and whose base was the rectangle B.B'', M.M'' backing on to the leg of the Eiffel Tower. The lower flange of the corbelled beam was composed of the flooring of the first-floor gallery, the web of the front, and one side wall of the pavilion with the key counterforts and horizontal rows of cored brickwork, and whose upper flange was formed of the flat-topped roof. The apex of this corbel at *o* was supported by 119 $\frac{1}{2}$ sq. in. of brickwork without failure. When the support at *n* had likewise been battered in, the apex rested on 93 sq. in., which therefore was subjected to a compressive stress of no less than 1,422lbs. to the sq. in. The support at *r* next followed, and the corbelled end rested on 47 sq. in., subjected to a compressive stress of 2,884lbs. to the sq. in.; still no failure ensued. Then the support *p* was demolished so as to leave only 4.7 sq. in. of support intact, and the apparent stress in compression attained 12.7 tons to the sq. in. The last stroke carried away the remains of the support, and thereupon failure occurred. The vertical counterforts of the turret *p'* *p''* and *n'* *n''* were the first to give way: the thrust of the flying arches forced out the corners at *m''*, *b''* and *e''* by snapping the wire cores (12 at each point), the corresponding uprights being forced outside the building and remaining practically intact from the level of the springing of the arches to the point of failure. The whole storey above *b'*, *o'*, *m'*, *e'* crashed down on its supports, and the work started by the thrust of the arches in forcing out the upright counterforts and the corners was completed, and the terraced roof dropped vertically down on to the platform at the ground level, carrying with it the first-floor gallery. The displacement in the direction of the undercut corner *o* being only to the extent of from 50 centimetres to 1 metre, the platform retained its horizontal position, suffering little or no deformation and presenting only a few slight cracks. The sudden fall of the terraced roof through a height of 12 metres produced such a violent shock that the sapped turret was completely smashed and ejected from the interior of the building.

There is very little doubt that if intermediate counterforts in cored brickwork had existed between the supports the corbel would not have fallen. The failure was also assisted by the circumstance of the intersection of key counterforts and horizontal ties at right angles. Had the portions above B', P' and N', M' been built of cored brickwork, the corbelled corner would doubtless have remained suspended in the air, as

30 sq. centimetres of support prevented it from giving way.

The tests demonstrate beyond question the extraordinary stability of structures reinforced with a metallic core even when of the flimsiest description, and further prove that so long as the equilibrium remained undisturbed, that all the stresses to which the building was subjected were resolved into tensional strains in the metallic core, and compressional strains normal to the contact surfaces of the bricks, neither of which attained anywhere near the limits of destruction; and that these were exercised on small masses of material, not as isolated parts of the building, but as portions of the whole, so that each was subjected to a uniform stress.

Nothing could well exceed the economy of material combined with resistance to every kind of deformation attained in the San Marino pavilion. There was no redundancy or waste in any part, and yet the general result under such destructive tests could not have been exceeded, if indeed equalled, if the greatest amount of material demanded by the most extravagant types of construction had been expended thereon.

The cost of this pavilion was 4d. per ft. cube, against that of 2s. 7d. per ft. cube for one in ordinary construction.

The Algerian pavilion at the Arras Exhibition, Pas de Calais, will be constructed on the same lines as the San Marino one, and after the closing of the exhibition will be subjected to a series of similar tests. M. Cottancin has kindly intimated to me that he will be pleased to vary or augment in any way these proposed tests to meet the requirements of any English architects who are interested in these constructions.

Some Examples.

The house, No. 29, Avenue Rapp, Paris, was erected from the designs of the architect, M. Laviette, on this system, and was deservedly one of the six houses premiated in the annual competition instituted by the Paris Municipality called the "Concours des Façades." The whole of the building, with the exception of the stone employed for the front of the ground floor, is of Cottancin construction. The vertical portions or walls are constructed of steel reinforced cement combined with similarly reinforced brick, and the inclined portions or roofs of both the materials in combination with the same system. The street front, of enamelled stoneware, is reinforced with the usual wire ties connected to the basket-work reinforcement of the main building, thus forming a continuous metallic ossature throughout the whole of the walls, floors, roofs and façade, and giving a complete structure of a fire-resisting nature and remarkable strength. On the ground floor the main walls usually carrying the superstructure are replaced by gin. by gin. reinforced pillars of brick. The walls of the staircases and lift are built of similar work 4½ in. thick, rising from the basement to the roof, the walls confining the living and other rooms being constructed of two thicknesses of 2¾ in. reinforced brickwork with the space between divided off by cross-partitions to form flues of regular dimensions, these walls taking their portion of the weight of the floors with the rest; the other hollow walls being used for the various heating and ventilating flues as required. The flooring is free from all timber except the parquet. The roofs are formed of sloping walls of reinforced brickwork, with brick and cement dormers attached to the metallic reinforcement, and, being constructed on the cellular system, provide attic rooms which are comfortable both in summer and in winter, and are fire-resisting, no timber being used. The weather surface of the roofs and flats is formed of a 2 in. thickness of armoured cement, and the street side of the house in the Avenue Rapp is

covered with ornamental tiles embedded in the cement and attached to the reinforcement. On the courtyard side at the rear the slopes are left in cement without any further covering, and no lead, zinc, or other metal is used for the weathering or gutters, all these being formed in cement. No lintels of any kind are employed over the openings, the reinforced brick wall above forming its own lintel by reason of the vertical tie afforded by the reinforcement.

The cost of this building was 1s. 10½d. per ft. cube, against that of an estimated cost in ordinary construction of 2s. 7d., whilst the saving of space gained in the suppression of the chimney breasts and walls, and in other portions of the structure, is found to be equal to about 60ft. super.

The next example I shall mention is St. Sidwell's Wesleyan Church, Exeter. The foundations are of the usual Cottancin caisson type, so arranged that the various stresses from the gallery and dome of the church are distributed to a few principal points of support only, thus eliminating the heavy steel work which would have been otherwise required for carrying these portions of the structure. The ground plan of the edifice is square until it reaches the gallery level, where it assumes the form of an octagon, and above this is the curved dome with its lantern and cupola (see Fig. 10, on p. 197, showing rough transverse-section through same), attaining a height of about 80ft. from the roadway. The walls are formed of two thicknesses of 3in. steel-cored brickwork and are hollow from ground to eaves, the width of this hollow being governed by the required thickness of the walls. These walls are strengthened throughout their entire height at certain supporting points by brick cross-ties of similar construction. The interspaces, as in No. 29, Avenue Rapp, will be utilized for heating and ventilating purposes. The most prominent constructional features of the building are the sloping suspended gallery, 14ft. wide, carried around the whole building, with the exception of the choir side, and the domed roof crowned with its superincumbent lantern and cupola. This gallery, which is octagonal on plan, is supported entirely on the walls at the back, and is constructed throughout of steel-cored brick and steel-cored cement, together with the stairs leading from the gallery to the choir. The principle of this construction is that of a surface of trellis-cored cement carried on nervures or ribs of steel-cored brick and steel-cored cement, attached to the reinforcement of the gallery floor, and so arranged as to form principal ribs running diagonally to fixed points in the walls disposed to take the ends of their trellis reinforcements and connect them to the brickwork core of the walls. Subsidiary ribs of similar form intersect the principal ones, being intimately connected together, so as to permit the loads to become allocated on the principal ribs and be transferred from them on to the walls. The front of the gallery is so made that it constitutes a light girder resting on the extremities of the ribs, assisting in distributing the weight to the principal ribs and to the two stairways in front of the choir supporting the ends of the gallery. The dome, which has a diameter of 71ft. 3in., is constructed of an inner skin of 3in. steel-cored brick, with an outer skin of steel-cored cement, and an intervening air-space. The wire reinforcement of the roof is tied to and combined with the armature of the walls, and is also placed slightly inside that of the walls in order to give it a vertical bearing, and thus suppress any outward thrust. The interior is to be decorated with stucco panels to emphasize the volant ribs of the dome; the exterior is completed in cement with moulded ribs at every angle. The large lantern with its roof and cupola above is of similar construction. The cost

of the work was 6½d. per ft. cube in the Cottancin construction. If it had been done with steel framing and brick filling with the necessary buttresses, and the gallery and stairs in wood, it would have cost 8d. per ft. cube, while in ordinary masonry construction, with the indispensable heavy counterforts it would have entailed, the cost would have been 4s. 2d. per ft. cube.

This dome with its lantern and cupola carried on walls of such slight thickness, without counterforts, is absolutely unique amongst both ancient and modern work as an instance of daring construction. For daringness it quite equals that of the Church of St. Jean de Montmartre, Paris, which has not been inaptly called by the Americans "The Folly of the Century" because of the unparalleled boldness of its design and the minimum proportions to which its component materials are constructionally reduced. In fact, as an example of almost seemingly temeritous originality the roof of the church at Exeter surpasses that of the church of St. Jean de Montmartre in no slight degree.

There are three more examples to which a passing reference will be made prior to drawing this paper to a close, namely:—

The municipal theatre at Tulle (Corrèze). This is interesting because it is the first building of its kind in the world where it is stated that adequate arrangements have been made not only to prevent the spreading of the fire from the stage to the proscenium and the auditorium, but to make everything connected with the stage itself of a fire-resisting nature, a matter of grave importance in view of the recent terrible holocaust at the Iroquois Theatre, Chicago. M. Cottancin claims to have done a great deal towards this by carrying and separating all the absolutely necessary woodwork with his armoured construction in such a manner as to confine any outbreak of fire to the place of its origin, thus preventing its growth, and this has been accomplished in a way that obviates any hindrance or interference to the stage hands in the execution of their various duties.

The casino at Enghien constructed on caisson-brick foundations 7 centimetres thick, on the mud at the edge of the lake. This casino and its appurtenances was erected on the Cottancin system at a cost of 7½d. per ft. cube. If it had been carried out in ordinary construction the cost would have been 10s. per ft. cube, owing to the expensive foundations that would have been necessary.

The hydro at the same place, also constructed with similar foundations on this system, cost 9d. per ft. cube, in comparison with an estimated cost of 9s. 1½d. per ft. cube for its erection in ordinary work.

The villa at Cenay, constructed of reinforced brickwork with an interior lining of cork brickwork. It is rendered externally with rough-cast, between imitation half-timber work. Reinforced cement floors, suppression of all lintels, and roof entirely of armoured-cement covered with tiles. Cost, 1s. 0½d. per ft. cube, against 2s. 2d. if built in the usual manner.

Obituary.

The late Mr. Isaac Serginson, builder, of Middlesbrough, died worth £15,193 gross and £8,638 nett.

Mr. W. H. Parton, brickmaker, of Birmingham, who died on January 4th, left estate which has been valued at £8,850 gross and £3,299 nett.

Mr. Hugh Challands, a member of the firm of Messrs. Joseph & Hugh Challands, builders and brickmakers, of Bottesford, who died on March 6th, left estate of the gross value of £3,215, with nett personality £2,266.

Builders' Notes.

The Lime Trade in the Peak is worse than it has been for some years. Short time is being worked at most of the quarries.

Savoy Hotel Extension.—Four hundred rooms have been added to the Savoy Hotel in the Strand. The extension will be opened to the public on May 3rd.

The Painters' Dispute in Leicester is to be referred to arbitration, a joint application having been made by the parties to the Board of Trade for the appointment of an arbitrator.

Cardiff's new Town Hall.—The contractors, Messrs. Turner & Sons, state that if the sculptures are completed promptly, they will be in a position to hand over the building on October 1st next.

Hull Post-Office.—The tender of Messrs. Bowman & Sons, builders and contractors, of Hull (slightly over £4,000), has been accepted for the first section of the new post-office at the corner of Lowgate and Alfred Gelder Street, Hull.

Building Trade at Newport, Mon.—A large number of carpenters and joiners are out of work at Newport. The Master-Builders' Association has consented to suspend overtime so as to afford employment to as many hands as possible.

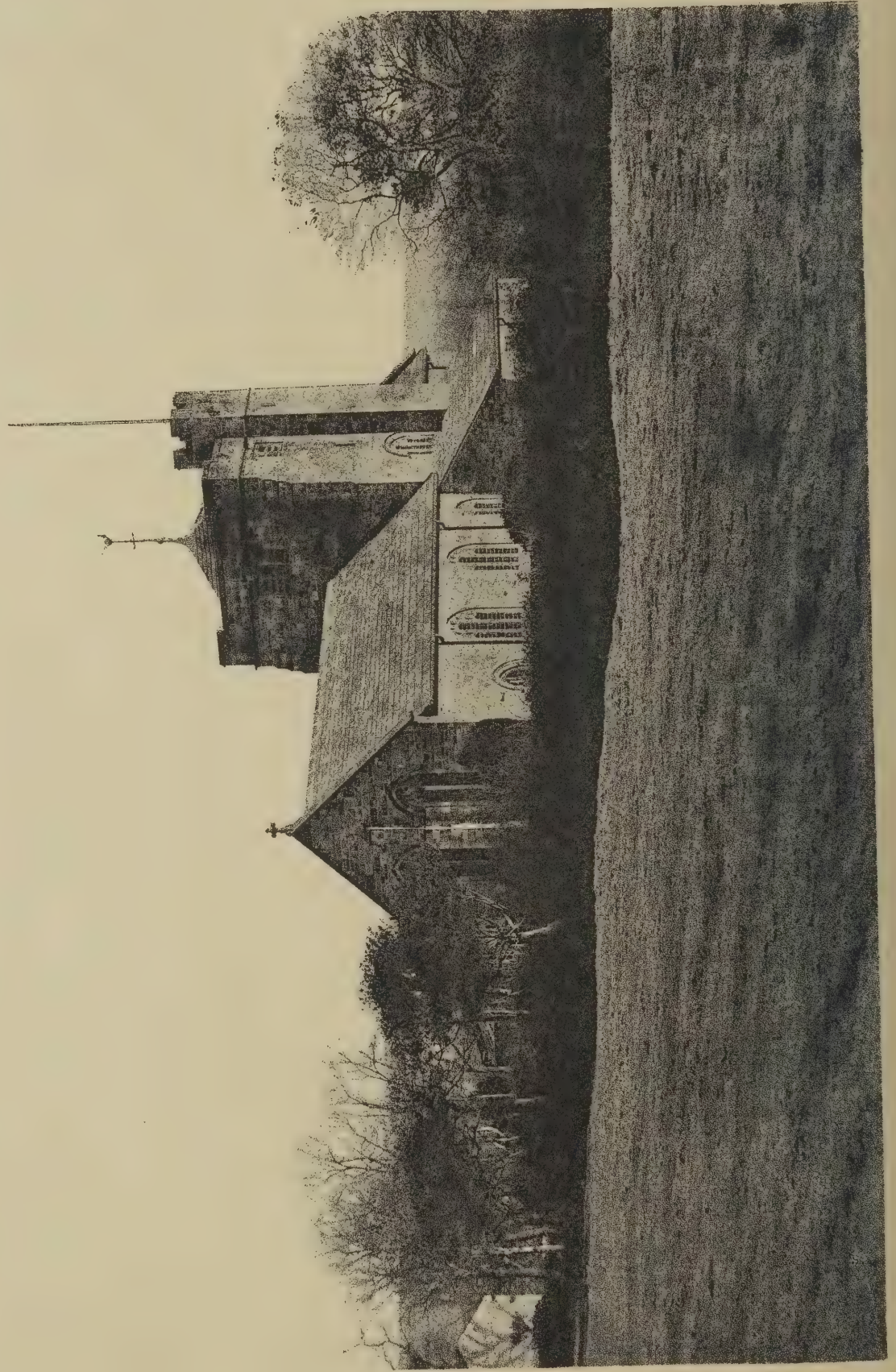
The British Seamen's Hospital, Constantinople, is being warmed and ventilated by means of Shorland's double-fronted patent Manchester stoves with descending smoke flues, supplied by Messrs. E. H. Shorland & Brother, of Manchester.

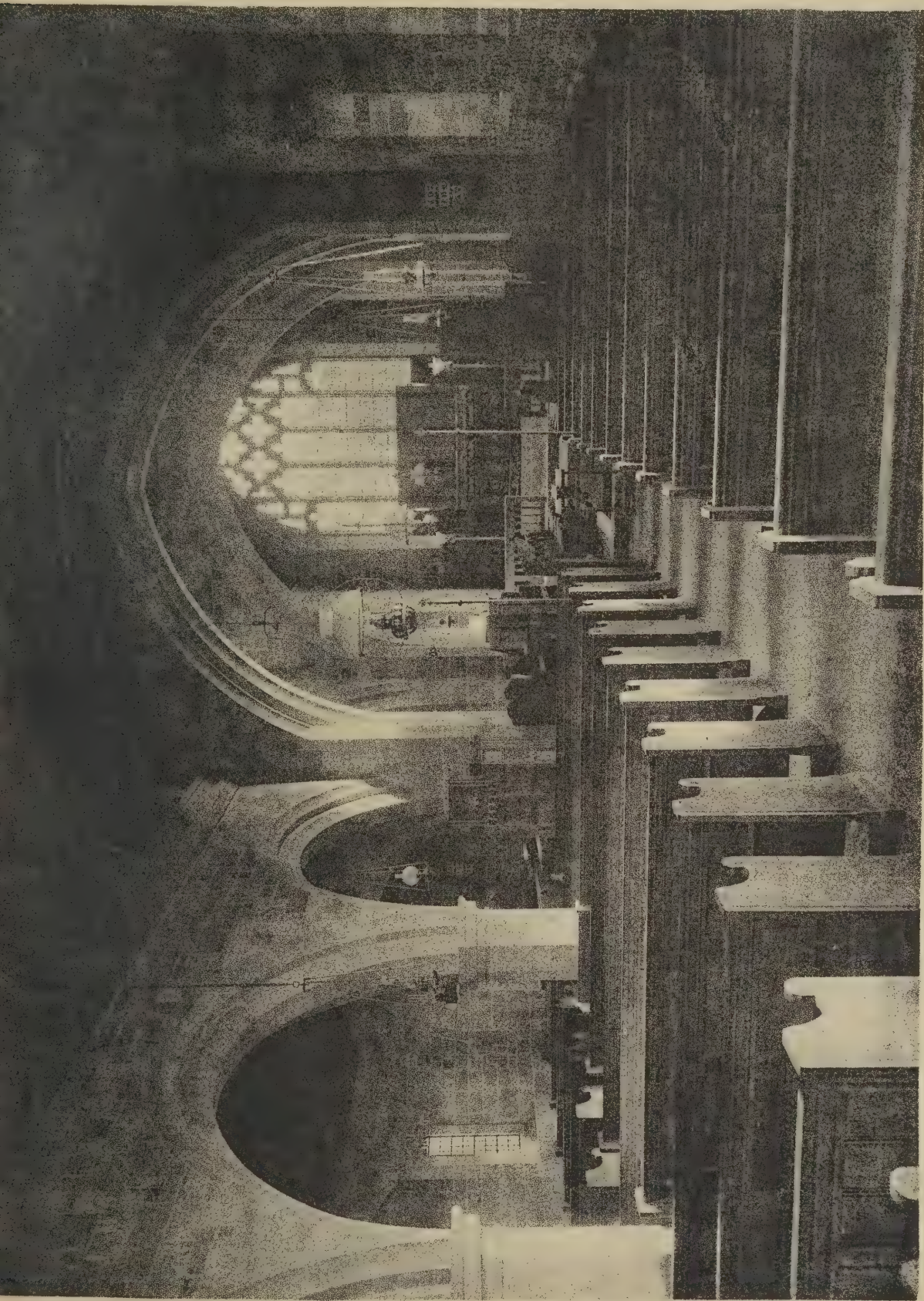
Another Dispute has arisen between the bricklayers and plasterers engaged in the building of the new Workhouse Infirmary at North Evington, hinging on the question of demarcation between the work of the two trades. The parties, having failed to agree upon a settlement, have jointly requested Alderman Smith, of Leicester, the local representative of the Board of Trade, to act as arbitrator in the matter, and he has consented to do so. Work is practically at a standstill.

Aerial Cableways.—At the meeting of the Institution of Civil Engineers on April 10th, Mr. J. M. Henderson, A.M.I.C.E., read a paper on "Aërial Suspension-Cableways." He defined a cableway as a device by which a suspended cable acts as a rail, on which travels a carriage provided with means of hoisting and lowering, so that a load may be conveyed to or removed from any point between the supports of the cable. He traced the history of the cableway generally, from the early machine used in the slate-quarries of Wales, having chains for standing and running cables and a stop fixed on the main cable to bring the carriage to rest at the desired position, to the long-span, flexible and high-speed cableway extensively used at the present day. Touching on the development of this apparatus, mention was made of the first "horizontal" cableway used in the Kemnay granite quarry, and of the difficulties met with and surmounted before satisfactory results were obtained with that machine. Inclined, fixed, horizontal, travelling and radial cableways were treated generally, and examples were given of the application of the various types to the construction of bridges, viaducts, waterworks, canal and dock works. For the last-mentioned purpose cableways used on the Naval works at Gibraltar and on other dockyard extensions now in progress for the Government and others were cited as examples. The application of cableways to quarrying, excavating and conveying materials from one point to another was then dealt with. Reference was also made to the advantages of the cableway, as compared with other means of handling materials, in respect of speed of working, efficiency, convenience, &c.

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THE BUILDING OF HOYLE'S WAREHOUSE, MANCHESTER (Photograph taken on April 15th). CHARLES HEATHCOTE AND SONS, ARCHITECTS.

ARCHITECTURAL ASSOCIATION.

A MEETING of the Architectural Association was held at 9, Conduit Street, W., last Friday evening, Mr. Henry T. Hare presiding. The following were elected members:—Messrs. S. R. Neate, H. B. Elkington and R. J. Casement. It was announced that Mr. Frederick Wheeler had rejoined. The following further donations to the New Premises Fund were also announced:—

	£	s.	d.
E. B. l'Anson	-	-	25 0 0
G. F. Bodley. R.A.	-	-	10 10 0
B. F. Fletcher	-	-	10 10 0
E. L. Lutyens	-	-	10 10 0
J. W. Beaumont	-	-	5 5 0
J. Howard Colls	-	-	5 5 0
W. H. Scrymgeour	-	-	5 5 0
T. Worthington	-	-	5 5 0
H. G. Lidstone	-	-	2 2 0
C. J. Marshall	-	-	2 2 0
H. H. Martyn & Co., Ltd.	-	-	2 2 0
James Miller	-	-	2 2 0
John Borrowman, junr.	-	-	1 1 0
T. R. Bridson	-	-	1 1 0
F. F. Le Maistre	-	-	1 1 0

Mr. Walter Gilbert read a paper on "Craftsmanship." Having referred to the craftsmen of the past and their work, the origin of craftsmanship in the family, its development with trade, the formation of the Guilds, and their powers, socially and municipally, he spoke of their decline in Renaissance times and with them the decline of art. Coming to the resuscitation of art he thought the world had advanced too quickly for the artist constitutionally conservative in ideas, but it was as useless to attempt to stem this tide of energy and requirements by using mediæval methods of production as it would be to attempt to stay the sun in its daily course. Nevertheless it was the artist's duty to bring his brain to bear on our requirements now as much as

was done naturally in the past, and even more so, for the difficulties to overcome were greater. And however one might regret the necessity, the artist must adopt the modern methods of production, making the machine subservient to his will and the instrument of his power. In the course of a recent criticism which he ventured to make on the methods and work of Birmingham casters and die-sinkers, he received a letter from a Birmingham firm of die-sinkers complaining that machine work was ousting hand work, and since apparently they seemed only to be getting a labourer's wage, die-sinking would soon be an art of the past.

He showed some medals lent by M. Janvier, which he thought, after making all allowances for the national differences of temperament of viewing art, effectually disposed of the fallacy that a machine reproduction of artistic value is impossible. Mr. Gilbert recalled the use of a tool worked by an electric battery under the guidance of hand by the means of which much beautiful carved silver work by Professor Herkomer, and that band of craftsmen now dispersed, was executed, among other things the badge and chain of the president of the Royal Water Colour Society. He did not deny that such methods are liable to great misunderstanding, but the methods are here, and it is our duty as artists to improve taste and production by their means.

The want of co-operation of many individuals, each working in the same art, though in different crafts, upon the same building, begat the clever draughtsmen and the exploiting—Execute Everything & Co., Ltd.

There must be no precedence but constant endeavour in the one craftsman that his work in his own material and artistic inspiration might not be unworthy to be placed alongside the decorations of his colleagues.

Another means to resuscitate art in its application to the building was by the proper use of schools. But school learning, however practical, could only form a portion of the true education of the true craftsman. The organized crafts must find the way by which the essentials of apprenticeship should be obtained in the shops and in the works. The essential of apprenticeship is one association of the learner and a craftsman in real production.

In conclusion he urged architects to stipulate that the decoration of their buildings should come from the artists themselves and not be included in the contract of the builder, and to afford the artists the opportunities which otherwise they were powerless to attain. A discussion followed in which Mr. E. Guy Dawber, Mr. H. Longden, Mr. A. H. Belcher and Mr. Hare took part.

HOYLE'S WAREHOUSE, MANCHESTER.

CONTINUING our weekly series of photographs showing the construction of this building, we now give a view taken on April 15th. The Corporation authorities refused consent to the larger steel pieces being conveyed along the streets by day, so that they can only be carried by night. The Rochdale Canal passes under the building and the boat traffic must not be interfered with. Readers will thus appreciate the difficulties to be surmounted and the amount of work possible under such conditions. This week the canal will be covered, enabling work to proceed over it by day, instead of only a few hours at night. The steel stanchions and beams up to the third-floor level are all on the ground ready for fixing as soon as the structure over the canal water-way can be completed.

Enquiries Answered.

The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Removing Paint on Stonework.

ST. HELENS.—J. S. writes: "I have been asked to remove some paint from a Caen stone altar, and I am told there is some preparation by which the same can be taken off. What is this, and how is it applied?"

We suggest Ebersson's V. & P. Solvent, supplied by Messrs. C. W. Waters, Ltd., 72, Great Eastern Street, London, E.C.

Assistant Surveyors, R.E.

GLASGOW.—J. S. E. writes: "Can copies be obtained of the examination papers for assistant surveyors, civil staff, Royal Engineers?"

Copies of the examination papers set at past examinations for the post of assistant surveyor, Royal Engineers, may be obtained at Messrs. Eyre & Spottiswoode's, East Harding Street, E.C. G. A. T. M.

Churches to Measure around Cardiff.

CARDIFF.—TOM writes: "Are there any churches around Cardiff worth measuring for the R.I.B.A. studentship examinations, excepting Llandaff Cathedral?"

At Ewenny, near Bridgend, there is a good Norman priory church, consisting of nave, one aisle, two transepts and choir, with a square tower rising in the centre. At Neath Abbey is some good thirteenth-century work, and at Llantwit Major you will find some later work, together with some of the finest Celtic crosses in the country. Beyond these, there is little good Gothic work nearer than Tintern; but surely it would be possible to ascertain such points locally without applying to us. G. A. T. M.

Helpringham Church, Lincs.

LONDON, N.—E. H. G. writes: "Kindly give particulars (and a sketch plan if possible) of Helpringham Church, Lincolnshire. I have prepared a sheet of drawings of a porch in the above church from Bowman & Crowther's 'Churches of the Middle Ages,' but no plan or description is given in that book. The sheet is for the R.I.B.A. intermediate examination."

Although a good deal of trouble has been taken, nothing can be found about Helpringham Church, Lincolnshire. The examiners were made for the testimonies of study (Gothic sheets) than that book illustrations should be copied. Fresh drawings altogether should be prepared. M.

Deductions in Brickwork.

SHEFFIELD.—TROWEL writes: "In measuring brickwork it is usual in the country (although not in London) to deduct openings and make an item of them, as, for example, 40yds. super. labour only to openings in brickwork in mortar reduced to gin. work. Are not openings over roof. super. deducted entirely when measured this way, whether intended to receive frames or not?"

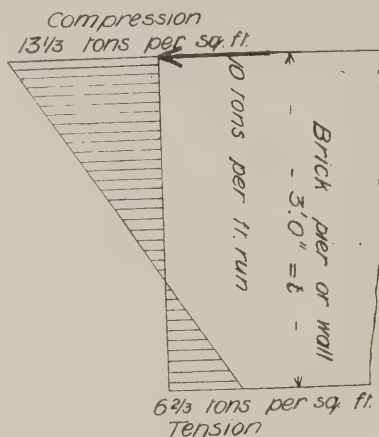
You do not put your query quite clearly. The following explanation, however, may clear up the doubt in your mind. In the provinces (the Northern, at any rate) all openings are deducted, and an item of "labour to openings" taken in the way you mention to all under roof. super. Those of roof. super. and over are deducted the face dimension, but no item of "labour to openings" is taken. In London the deductions only are measured. The Northern practice seems (to a Southerner, at least) quite illogical, as the only labour to an opening is the plumb-

ing of the jambs, the amount of which is not indicated in the slightest degree by superficial dimension. W. E. D.

Non-Axial Loads.

LONDON, S.W.—STEEL writes: "(1) Required a good method of computing the stresses and strains (graphically if possible) set up in a stanchion 20ft. long caused by a load of 20 tons—(a) applied direct on to one face only of the stanchion; (b) applied, say, 18in. away out from the face of the stanchion, a suitable bracket being used in this case. Ends of stanchions to be considered as fixed. (2) A blue brick pier is used to support a load of 15 tons applied in line with the outside face of the pier. How would you arrive at a close approximation of the stresses and strains in it?"

When a load, or the resultant of the loads, meets the edge of a section (say, a brick



wall or pier) the reactions will be as shown by the above sketch, where the load being w tons per ft. width of pier, the maximum

compression will be $\frac{4w}{t}$ tons per sq. ft. and

the maximum tension half the compression, the line of no stress being at $\frac{1}{3}$ thickness of the pier from the face. In practice, if the load be applied at the top of the pier it will be distributed to an unknown extent over the lowest section in addition to a uniform loading from the weight of the brickwork itself, but the maximum will not exceed the above figures plus the weight of the pier. In the case of a rolled joist used as a stanchion with part cut away so that the load is resting on the end of one flange, there is no definite theory to go upon, but it would appear to be proper to consider that flange alone as carrying the load, using Gordon's formula and taking the width of the flange as the least diameter. With a 20-ton load carried on a bracket projecting from one side so that the axis of the load is, say, 2ft. from the axis of the stanchion there will be a bending moment of 20 by 2 = 40ft.-tons to allow for besides the dead weight of the load. This subject will be found fully worked out in "Designing

Ironwork," Second Series, Part II. (Spon, 2s. 6d.), to which you are referred.

HENRY ADAMS.

A Church Building Site.

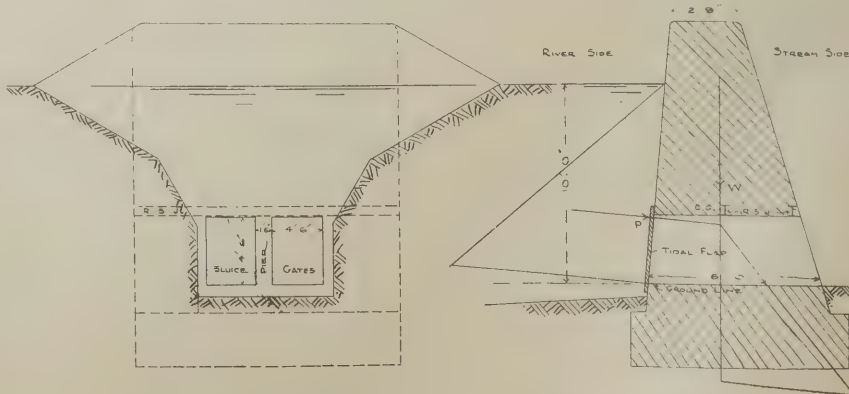
PLUMSTEAD.—H. W. writes: "The accompanying rough tracing (not reproduced) shows a corner site which has been offered to a church for the erection of a chapel, &c. What area of the site will the L.C.C. allow to be covered by buildings? Houses have been built along the road in which it is situated?"

Save with the special consent of the Council, every building upon the plot shown in your sketch must be set back from the roads at least as much as the houses at the side of it (London Building Act, 1894, section 22). Apparently by section 78 of the same Act a "public building" such as you propose to erect is, for this purpose, brought within the provisions of section 41, and by this latter section, subsection iv. (a), the Council may, at their option, permit the whole area to be built upon, the building coming within the there-mentioned definition of "a building at a corner abutting upon two streets." You may obtain the local by-laws on application to the district surveyor (Mr. I. Batterbury, 23, Conduit Road, Plumstead). F. S. I.

Concrete Dam with Sluice Gates.

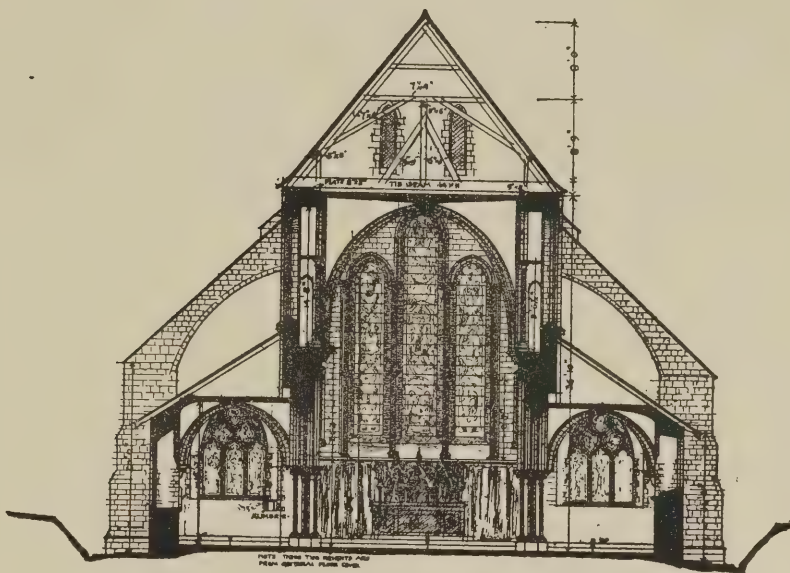
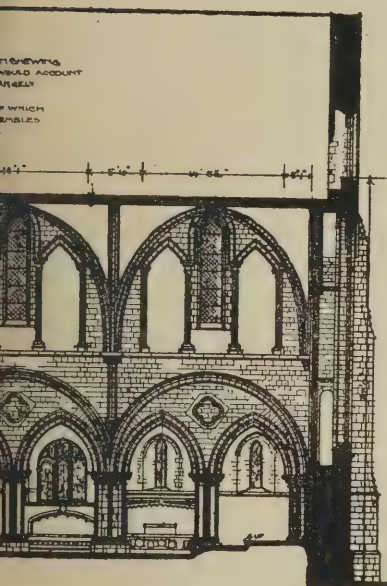
BARKING.—JOHNNIE WALKER writes: "I am constructing a concrete dam with sluice gates as shown by the accompanying sketch. The concrete is 4 to 1, and I have designed the wall so that in taking a solid section (i.e., not at sluice gates) the centre of pressure just comes within the inner third at the ground line. Thus the side portions of the dam which are in the bank are of sufficient section, but in the centre portion which is exposed to the pressure of the water the bottom half is cut away to form openings for the sluices. Two rolled-steel joists are run through the wall from end to end to support the middle portion. The foundation is good gravel, and will support the pressure on the base. (1) Must the stability of the concrete be calculated for in the same way as a masonry wall, or is some allowance made for the tensile strength of the concrete? (2) Would it be correct to assume that the side portions of the wall and the centre pier (1ft. 6in. thick) will take the stress on the centre portion?"

There are several points not clear in the drawing sent: the dotted lines showing the length of the dam are carried up and down through the middle of the side slopes, but an extension is made from the top of the dam downwards on each side to the top of the slope, so that the dam and slope meet at water-level. The drawing, though neat, is not to scale; thus unnecessary trouble is given in trying to understand it, and one has to give up the task at last. The stability of a concrete dam is calculated in a similar manner to that of a masonry dam. Keeping

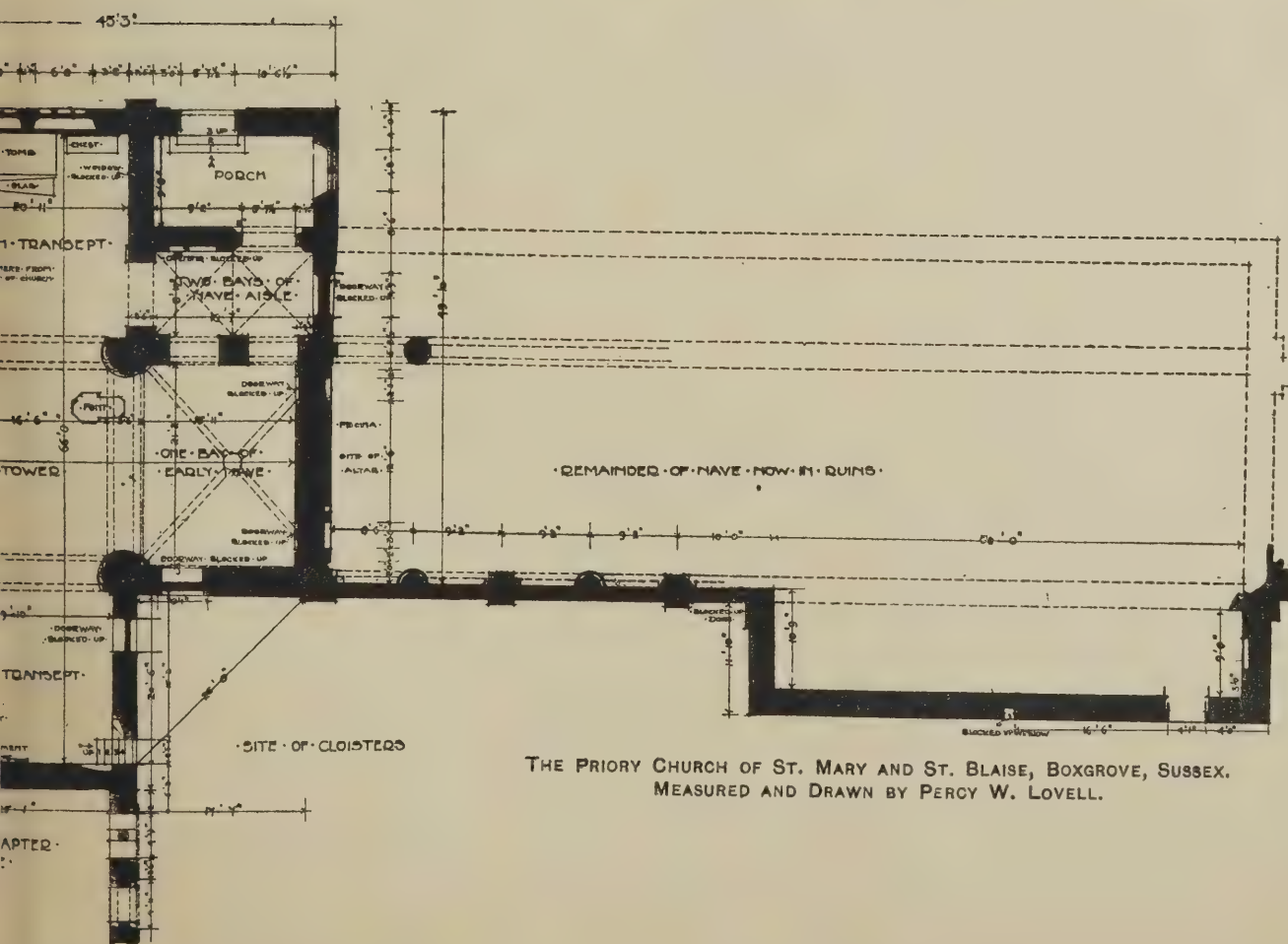


CONCRETE DAM WITH SLUICE GATES.

LIBRARY
OF THE
UNIVERSITY OF ILLINOIS



CROSS SECTION.



LIBRARY
OF THE
UNIVERSITY OF ILLINOIS

the resultant within the middle third only means that the inner edge is not subject to tension. The resultant may fall beyond this point to such a distance that the compression on the outer edge and the tension on the inner edge are within safe limits. When any portion of a wall is cut away allowance must be made not only for loss of weight but also for the safe resistance of the part that is left. In the present case it looks as if a stanchion is required under the girder on the outer face, but in the circumstances nothing definite can be stated.

HENRY ADAMS.

Steel Building and Ferro-Concrete Construction.

EDINBURGH.—WAVERLEY writes: "Please name some periodicals or magazines (British or American) which you would recommend for the purpose of keeping in touch with steel building construction and ferro-concrete work."

The New York "Engineering Record," published in this country at Hastings House, Norfolk Street, Strand, W.C.

Payment for Overtime.

DRAUGHTSMAN writes: "Are architectural draughtsmen entitled to be paid for working extra time?"

Payment for overtime is not due to an assistant, we consider, if it is only occasional and not long continued and the time he spends is made up to him in some other way. Of course a small sum is due for extra expense in obtaining tea away from home, say 1s. per evening. With overtime continued for some time payment is usually made at the rate of time and a half.

Plans of Royal Residences.

CARDIFF.—OHMA writes: "Where can I find plans of Windsor Castle, Buckingham Palace, Osborne, Sandringham or any other Royal residence of note at home or abroad?"

Plans of Buckingham Palace may be found in "Public Buildings of London," by W. H. Leeds, which was published by John Weale, of 59, High Holborn, W.C., in 1838. I cannot find plans of any of the other buildings mentioned. M.

Dimensions of Buttresses.

BRISTOL.—CHIP writes: "By what means are the dimensions of brick or stone buttresses ascertained, and at what intervals should they be built in the external walls of a hall 60ft. by 30ft.?"

Buttresses should be looked upon as short walls and must be proportioned to resist the thrust coming upon them. The thin curtain walls between merely serve to enclose and afford shelter. Buttresses should therefore only be placed at the points where loads are concentrated, such as from roof-trusses or vaults or from girders carrying floors. Buttresses are also used sometimes in retaining walls at regular intervals to give stiffness where such a course is found to be more economical than walls of uniform thickness. The methods of calculating the dimensions of buttresses are given in the standard textbooks on building construction.

Gymnasium and Changing-Room at Secondary School.

LONDON.—QUERY writes: "What should be the size (exclusive of gallery) of a gymnasium for a boys' secondary day school, possessing about six acres of playing fields, for (a) 400 and (b) 500 boys? What should be the size of a detached changing-room for all games for the same school and numbers?"

The gymnasium should be (a) 35ft. by 75ft.; (b) 40ft. by 85ft. The changing-room should measure 20ft. by 40ft. internally. Taking the floor-area to give 25ft. super. per boy, (a) will allow for 100 boys and teachers, (b) for 125 boys and teachers. There is an

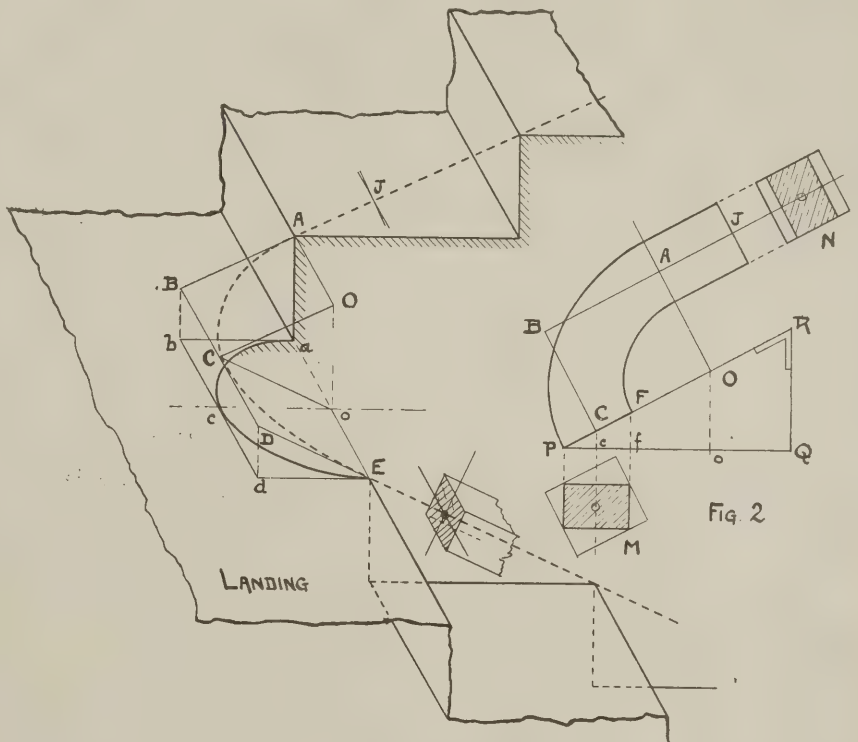
exceedingly good article in Mr. Felix Clay's work on "Schools." A. H. R.-T.

Face Mould for Handrail Wreath.

SOUTHPORT writes: "I should like to know whether the method of obtaining the face mould for a handrail wreath shown by accompanying sketch (not reproduced) is correct for a stair with a half-space landing, the centre of ellipse being point A, pitch taken as 45 degs. for convenience, and well = 5in."

As the method shown is not generally applicable, being correct only for the particular angle of pitch assumed, Figs. 1 and 2 are given with the object of assisting any readers who may have experienced similar difficulties. The case chosen for illustration is the simplest occurring in practice for a half-space landing arranged between two straight flights of equal pitch, the last riser of the lower flight and the first riser of the upper being so placed and the size of the well so chosen that no easings are

case $3\frac{1}{2}$ in.); also fo equal to the inner radius of rail ($4\frac{1}{2}$ in.); and square up the points to the pitch line PR at F and O . Then OF and OP are the semi-major axes of the inner and outer curves respectively of the face mould, of , Op being of course the corresponding half-minor axes. This being done, the quarter ellipses may be drawn in the usual way, either by means of a string or trammel. The same mould serves for both quarter wreaths, one being the reverse of the other. The joint line at the crown is the line of the major axis, and the twist bevel for this joint is the upper angle PRO of the pitchboard. The other joint is parallel to the minor axis, so that there is no twist relatively to the "plane of plank." The sections at M and N show the thickness of plank required for the fully squared wreath. On comparing your method with Fig. 2, you will easily see that you would be wrong in setting off the pitch angle of straight flights where you do. To make your method correct, you must set out, not the angle of pitch, but its complement.



FACE Mould FOR HANDRAIL WREATH.

required on the rail, giving a level tangent at the crown of the well. The condition necessary for no easing and a level tangent at the crown is that the distances ab and de together make up the going of one step (in this case 12in.). If $ab + de$ be less than this, the point B would obviously be higher than D and hence the line BD which joins these points—that is, the common tangent to the two wreaths—would then be inclined. When this inclination is any way decided, the joint at the crown will require to be set at right angles to it in place of a plumb joint, as in the case chosen. Further, if $ab + de$ were greater than the going of a step, the common tangent BD would dip towards B , a line which the handrail could not follow, and when this arises the appearance of the handrail can only be made passable by forming easings either on the straight rail or on the ends of wreaths. These considerations show the importance of correctly placing the risers at the well. Probably the easiest way to obtain the face mould for the two wreaths for the simple case is that shown by Fig. 2. Let PQR be the pitchboard used for setting out the stair. Mark off along its base PQ from P the distance Pf equal to the width of rail (in this

In your drawing you get a correct mould for the pitch assumed because it is 45 degs., and the same with its complement. If you had taken the pitch angle 35 degs., the plane of your mould would be 20 degs. too steeply pitched, or would only join in with a straight rail pitched at 55 degs. W. & A. M.

Women in Architects' Offices.

LONDON.—ETHEL J. writes: "(1) How could I get into an architect's office where girls are employed for tracing, &c., and what qualifications are necessary? (2) Would having passed examinations in freehand, model and geometrical drawing, &c., be of any advantage? (3) Would a knowledge of solid geometry and perspective be of any use? (4) Which is the best way to obtain a situation? (5) What is the salary generally given?"

(1) In architects' offices women are employed chiefly as typists, though a few are engaged as tracers. Women tracers are mostly employed by the drawing and tracing offices, which you will find advertising in our columns or named in the London Directory. The qualifications necessary are an elementary knowledge of building construction, so as to enable indistinct or involved drawings to be clearly traced without the absurd blunders



BOXGROVE CHURCH, SUSSEX: SOUTH ELEVATION.

MEASURED AND DRAWN BY PERCY W. LOVELL.



often made. You must also know the various methods of showing materials by dotted lines, &c.; be able to use all the various instruments; be able to colour harmoniously and flatly, and in all be a neat and quick worker. (2 and 3) Yes, certainly. If you are able to set up perspectives accurately, you would be of much greater value. (4) Advertise, and write to the drawing and tracing offices and well-known architects. Men generally call personally, but this method would not suit women. (5) From 15s. to 30s. a week.

A Strange Miserere.

LONDON, E.C.—B. J. & L. write: "Can you tell us where the original of this carving is to be found?"

The photograph does not represent an old miserere—of course not of Exeter, as, except one, these are all thirteenth-century work: nor is it one of the old fifteenth-century series at Worcester, Gloucester or Chester, photographs of which are before me as I



write. But I have seen this before, though I cannot think where. I fancy it is in Chester Cathedral and I have an idea it was done under the late Sir G. Gilbert Scott in his latter days. It represents Gladstone, by a stroke of his pen—held in his mouth—upsetting the Irish Church. Its non-claim to antiquity is distinctly shown by the little cross (rather thicker than a lucifer match) stuck on the apex of the early little church. Our earlier craftsmen never indulged in such gim-crack accessories.

HARRY HEMS.

Bricks and Mortar.

Aphorism for the Week.

Nothing is more likely to lead to a really living style than the consideration, first of all of the suitable use of material.

WILLIAM MORRIS.

Our Plates.

THE priory church of Boxgrove, Sussex, was founded between 1117 and 1135 by Robert de Haia. It was dedicated to St. Mary and St. Blaize (the latter was a bishop of Armenia who was renowned for his miracles and suffered martyrdom A.D. 289). Robert de Haia gave the priory to the Abbey of Essay, in Normandy. At first there were three monks, who were gradually increased to thirteen and then reduced to nine, which was the number when the priory was finally dissolved in 1535 and the site granted to Thomas Lord de la Warre. A considerable portion of the priory was pulled down in 1780, and at the present day there only remains the choir, transepts, tower and one bay of the nave, with the ruins of the remainder of the nave and refectory, pigeon-house and portions of the enclosing wall. The priory belonged to the Benedictine order. The present church is built of flints with odd bits of stone introduced. The quoins are of dressed stone, as also the tower and flying buttresses and a considerable portion of the east and west ends. It is considered probable that there were two churches under one roof—one parochial, the other monastical. As there is no record of the dates of any portion of the building, our only guides are the mouldings. The transepts and the lower portion of the side of the one bay of the nave are clearly the oldest parts and, no doubt, belong to the church built on the foundation of the priory. The ruined arches from chapter-house to cloisters belong probably to this period: they are semicircular, and those from transepts to aisles have early imposts. The tower is of Transitional character. The bases in the tower arcade resemble the attic base. The chancel or tower arch mouldings are bowtels—round in the case of north and south arches, pointed in the other two. In the ruined

nave the arches are pointed, but only chamfered. The caps to the intermediate circular piers are of early character, while those to the clustered columns are foliated. The ceiling was vaulted, with one clearstory window to each bay. The choir is far more elaborate and is of pure Early English character, though there is but little foliated work in caps, &c. The treatment of two pointed arches enclosed in a semicircular moulding is curious, and the similar work at Chichester helps to fix the date as thirteenth century. The piers become more elaborate as they approach the east end. On the south side one is removed to make room for the de la Warre's chantry, an elaborate piece of work dated 1532. The vaulting of the church is believed to be unique. In the altar steps at the east end of the south aisle are a number of the glazed tiles with which the church was originally paved. The painting and preparation of these for the kiln was one of the occupations of the monks, and it was customary in the larger convents to have them placed before the altars of the parish churches of which they had the patronage. The measured drawings of the church which we reproduce are by Mr. Percy W. Lovell, of London.—The church at Dolphinholme is one of Messrs. Austin & Paley's recent works. It is an extremely picturesque and delightful little building exhibiting much refinement in its design.—The new Manchester Southern Hospital for Women and Children, illustrated in our issue for last week (when no particulars of it were to hand), has been designed to accommodate about 100 cases. It will be faced with brick and terra-cotta and roofed with slate. All the floors will be of concrete and steel, finished generally in tinted Eubœolith, with terrazzo for the operating rooms—with the exception of the last, the walls of the hospital portions will be finished internally in Sirapite plaster. The kitchen department is on the top main floor of the administrative block. The corridors connecting the various blocks take the form of glazed metal bridges, allowing a free circulation of air above and below to each floor. Mr. John Ely, F.R.I.B.A., of Manchester, is the architect for the new building.

MALVERN FREE LIBRARY COMPETITION.

A Report and a Criticism.

THE following is the report of Mr. Henry T. Hare, F.R.I.B.A., the assessor in this competition:—

"I have made a careful examination of the fifty-eight designs submitted, and beg to report that I consider the following best meet the conditions and requirements in the order they are named:—First, No. 32; second, No. 20; third, No. 35. I also regard No. 19 as an extremely able design, and it is to be regretted that the author should have paid so little regard to the limit of cost. Design 32 should work out very satisfactorily, and is one of the most economical submitted. I am of opinion, however, that the author's estimate is too sanguine a one, and that it is practically impossible to obtain all the accommodation required by the instructions for the sum of £7,000. In carrying out the work, therefore, it will be necessary either to make some reduction in accommodation or to allow some latitude in the expenditure. I note also that no provision for extract ventilation is shown or described. This would have to be arranged for by mechanical or other means placed in one of the turrets on the roof."

The author of the first-premiated design is Mr. H. A. Crouch, A.R.I.B.A., 12, Gray's Inn Square, London; of the second, Messrs. E. Stone Collins and Ralph Knott, 66, Oakley Street, Chelsea, London; and of the third, Mr. Michael Bunney, 23, Queen Anne's Gate, Westminster. Plan 19, referred to by the assessor, was sent in by Mr. A. C. Baker, of Malvern.

Mr. Crouch's design has been adopted by the urban district council, though the chairman intimated at the meeting that "it would be for the Library Committee to consider how best the design could be carried out for the amount at their disposal."

The following was written before Mr. Hare's report was made public:—

In spite of the unfairness of the conditions, fifty-eight sets of drawings were sent in, and as each set contains a perspective and four or five strainers of scale drawings, an instructive commentary is afforded on what the profession is ready to tolerate. One point, however, is very clear, namely, the "originality" of the modern architect. One would imagine that a comparatively simple problem in planning on an open site would almost solve itself, and that a considerable amount of repetition would be evident. But this is not the case, as every possible and impossible arrangement of the building has been evolved by the competitors, and the elevations exhibit every phase of modern architecture, from Strawberry Hill Gothic to Art Nouveau as it is made in the Midlands. On the whole we prefer Strawberry Hill. The usual competition humourist is in full force. There is the gentleman who, in a praiseworthy effort to give £10,000 worth of building for £7,000, allots 2ft. by 1ft. 3in. of floor-space to the seats of his lecture-hall, and the gentleman who frankly gives up the job and provides a corridor roof, long leading nowhere in particular. Then there is the architect who cubes up his building after the drawings are inked in, and adds a note that the rooms are to be made smaller, as figured in red. The perspective artist is the person who scores on an occasion of this kind, and it is interesting to notice the sign-manual of the same skilful hand written large on several of the best perspectives. In fact, certain similarities of style would lead one to imagine that elevations too might be traced to the same source were not one's too hurried impressions corrected by the knowledge that every competitor had signed a declaration that "the design is his own personal work."

Some of the plans show considerable ingenuity in the solution of the real crux of the problem, namely, the position of the lecture-hall in relation to the library, and the majority can be grouped into two main classes—that in which the hall is separated from the main building, and that in which it is simply treated as one room in the block. The former is the most satisfactory plan architecturally and practically, but the latter is more likely to be successful on account of economy in building. In fact, the competition will probably be awarded to a design of this class, such as 3 or 32, in which the rooms have been reduced to the smallest possible dimensions, where the sizes are not specifically laid down in the conditions. A large number of plans have been spoilt by ill-contrived corridors to the lecture-hall, and many others have followed the obtuse angle of the return frontage with bad results. Many, too, have fallen into the trap set in the conditions, and built separate houses for caretaker and librarian, involving a one-storey library quite unsuitable for the site. The designs that show the best architectural treatment, such as 17, 19, 23 or 43, will probably be out of court on account of expense. This is unfortunate, as the sizes of the principal rooms are unnecessarily large for a widely-scattered district of the population of Malvern.

THE SOCIETY OF ARCHITECTS.

Annual Dinner.

THE twentieth annual dinner of the Society of Architects was held on Friday evening at De Keyser's Royal Hotel, Victoria Embankment, the chair being taken by Mr. Walter W. Thomas, the president. Among those present were Lord Monkswell, Alderman Alliston (deputy-chairman L.C.C.), Sir Walter Foster, M.P., Canon Vere, the Rev. Newton Mant, M.A., Judge Rentoul, Alderman Sir H. E. Knight (past Lord Mayor of London), the presidents of the Institute of Builders, the London Master-Builders' Association, the Institute of Patent Agents, the Law Society and the Institution of Electrical Engineers, the masters of the Tylders and Bricklayers', the Painters', and the Carpenters' Companies, the mayors of Westminster, Hammersmith, Wandsworth, Hackney, Fulham, Paddington, St. Marylebone, Finsbury, Chatham and Gillingham, Mr. L. A. Atherley-Jones, K.C., M.P., Mr. A. W. W. Dale, M.A., Prof. F. M. Simpson, Mr. Edwin O. Sachs, Mr. B. L. Cohen, M.P., Mr. W. F. Lawrence, M.P., and Mr. Austin Taylor, M.P.

After the toasts of the Royal Family and the Houses of Parliament had been given, His Honour Judge Rentoul proposed "The London Local Authorities," which was responded to by Alderman Alliston and Alderman Walter Emden (mayor of Westminster). Mr. Emden voiced a practical grievance against the multiplicity of plans required to be submitted to one and another of the London authorities. The Council of course dealt with such matters as the main sewers, important street improvements, fire service, bridges, &c., which it was desirable the central body should control, but the great mass of the work was in the hands of the municipalities, and Mr. Emden urged the necessity of the central body making the administration of the by-laws uniform and so saving much delay and inconvenience.

Mr. L. A. Atherley-Jones proposed "The Society of Architects and Architecture," in doing which he spoke of the Registration Bill. The president, in responding, referred to the same matter, mentioning that the medical profession had been forty years in obtaining their Act and had met with just such opposition as the Architects' Registra-

tion Bill now encountered; so that, though this Bill had been before Parliament for some fifteen years, there was no reason to be discouraged with the results of their efforts; indeed, the prospects of some practical scheme of federation being accomplished had never been so good as they were at present. A great change had taken place in the attitude of the Royal Institute towards this matter and at least two-thirds of its allied societies had decided for registration. The profession as a whole was practically solid on the principle; in fact, so strong had been the feeling in its favour that the Institute had appointed a committee to report upon the whole question, and though he (Mr. Thomas) could not pledge the Council of the Society of Architects in any way he would say that they awaited the report of the senior body with some interest, as upon it would probably depend the future action of the Society in regard to the matter. The Society had set £1,000 to a reserve fund, among the possible applications of which the Registration Bill was not forgotten.

Prof. F. M. Simpson, who also responded to this toast, referred to the setting up of a practical standard of ability in architecture, which he thought would be best obtained by a thorough and systematic system of education. The great drawback in this country was the haphazard manner of tuition that existed. Looking at the whole body of modern English architecture we saw that the best was the very best—equal if not superior to what had been done in this or any other country for two or three hundred years. Then we came to work of greatly inferior character and other work lower still in the scale, so low indeed as hardly to be brought under the same heading as the best architecture; thus, if one had to sum up in one word the work done in England to-day, that word would be "inequality." They looked to France—he did not say French architecture was equal to our own—but the average standard of excellence was undoubtedly higher than it was here, and this was due to their unbroken educational traditions. In Germany, where the work was perhaps inferior, great excellence in construction was to be seen, chiefly due to the remarkable influence of the polytechnic schools brought into existence about a quarter of a century ago. And in America, where the educational system was on a thoroughly efficient basis, great strides were being made. It was impossible to do everything by education—an architect could no more be made by it than an acrobat—but if by proper educational facilities a man were given a fair start, when he got into an office he would have sufficient grounding to understand the manner of all he saw. It would be a great thing if there were some sound uniform facilities for architectural instruction established throughout this country.

The toast of "Our Guests" was proposed by Mr. G. Gard Pye (vice-president of the Society) and responded to by Alderman Sir H. E. Knight and Mr. A. A. Hudson (member of the Tribunal of Appeal).

Mr. Ellis Marsland proposed "The Arts and Crafts allied to Architecture," to which Mr. A. W. W. Dale, M.A. (vice-chancellor of Liverpool University) and Mr. C. H. Barnsley (president of the Institute of Builders) replied.

Tipton Public Buildings Competition.—Thirteen designs were sent in for this competition. The first premium of £50 has been awarded to Mr. E. G. Coslett, Dudley; the second (£20) to Mr. George H. Wenyon, Stafford; and the third (£10) to Mr. A. G. Latham, Birmingham. Mr. Coslett's design is estimated to cost £8,500—town hall £3,500, free library £5,000.

R.I.B.A.

Annual Report of the Council.

THE annual report of the Council for the past year, to be presented at the annual general meeting of the Royal Institute of British Architects on Monday next, May 2nd, refers to many matters already reported in our columns, so that there is no need to repeat them now. A number of items of special interest, however, some quite new, may be given.

The Council have agreed to accept the final certificates in architecture granted by the Manchester University and by University College, London, as exempting from the Intermediate Examination, on the same conditions as govern the arrangement already made with the Liverpool University. The Special Examination for Colonial candidates will be held this year in Montreal and Melbourne.

The next annual dinner will take place at Newcastle—probably in October—under the auspices of the Northern Architectural Association.

The "Easement of Light Bill" will again be before Parliament this session.

The Council have drawn the attention of the Local Government Board to the desirability of uniformity in building by-laws adopted by all the authorities surrounding the metropolitan boroughs, and of the Board withholding its sanction from proposed by-laws which would prove more onerous than those in the London Building Act. The Council have sent to the Local Government Board, the London County Council and the London Borough Councils a letter pointing out the unnecessarily drastic character of the new L.C.C. by-laws as to the deposition of plans with regard to drainage work, and urging simplification.

The Council have been requested by H.M. Office of Works to assist the Government in obtaining a selection of the best architectural talent available by nominating a limited list of not less than six architects for the proposed extensions to the British Museum.

The Council have been in communication with the Corporation of London in regard to the association of an architect with their engineer in the erection of the new Southwark Bridge. The Bridge House Estates Committee have requested the president to advise them in obtaining competitive designs for the architectural treatment of the bridge on the structural lines already laid down by their engineer, as soon as the necessary Bill can pass through Parliament. Quite recently, however, difficulties have arisen which may cause considerable delay.

A resolution was passed by the Council that "the Registration Committee be formed by associating with the Council ten additional representatives of the allied societies, so that the number of the London and non-metropolitan members of the committee be the same; further, that these ten do consist of one representative from each of the eight societies not at present represented by their presidents on the Council, and of one additional representative from each of the two societies which are numerically strongest in professional members, and which have not two or more of their members at present on the Council." A preliminary meeting of the committee was held on March 28th.

The Council have appointed a committee consisting of representative architects of the United Kingdom, both members and non-members of the Institute, and of such prominent educationalists as Sir Arthur Rücker, Professor Perry and Mr. Sidney Webb, to devise a scheme for the co-ordination of architectural education throughout the country. This committee is still sitting.

The question of county and municipal authorities employing their own salaried officials to design and execute important public buildings has received the serious attention of the Council, who have appointed a committee consisting of some of their London members and all the presidents of allied societies to enquire into and suggest remedies for what they cannot but regard as a growing evil. The committee hope to submit their report to the Council before the end of the session.

The report on brickwork tests is now being printed, and will be issued in volume form as soon as it is ready.

The Council have appointed Messrs. Thomas Blashill, W. D. Caröe and H. D. Searles-Wood to represent the Institute on a committee of the Plumbers' Company, the Water Authorities and the Institute to enquire into the waste of water and the question of plumbers' fittings in water supply.

Sir William Emerson has been appointed a member of the Court of the Victoria University, Liverpool. The Institute portrait of him, by Mr. J. J. Shannon, A.R.A., will be exhibited this summer at the Royal Academy.

Messrs. John Slater, J. W. Simpson and the secretary were appointed by the Council to represent the Institute on a Consultative Committee, authorized by the Board of Education, and assembled for the purpose of enquiry into the possibility of instituting a leaving examination from secondary schools throughout the country, which might stand in lieu of the preliminary examinations required by the various professional bodies. The committee has not yet issued its report.

As an instance of the difficulty of awakening in the lay mind an appreciation of the value of correct dealing in the matter of competitions, the Council report that, in view of the various unsatisfactory competitions for Carnegie libraries, they wrote to Mr. Carnegie suggesting that he should insert in his future deeds of gift a condition that if the beneficiaries contemplated instituting a competition for the proposed building, such competition should be conducted according to the Institute's "Suggestions." They were met by that gentleman with a curt refusal.

At the opening meeting of the session Lord Windsor, First Commissioner of Works, spoke encouragingly as to the possibility of forming an Advisory Committee to whom the architectural considerations involved in large building schemes might be referred by the Government. The Council have written to Lord Windsor a formal letter asking him to lay before His Majesty's Government their request that such a committee should be appointed. The Council understand that for some time past a committee consisting of the president, Sir John Taylor and Mr. John Belcher has been requested by the Office of Works to advise them from time to time on various buildings of public importance.

The Council report that the Institute continues to enjoy financial prosperity. The balance of income over expenditure is £918 11s. 4d., after the payment of a grant of £500 to the Architectural Association Building Fund.

The Art Standing Committee report that at Berwick-upon-Tweed some progress, on the lines urged by them, has been made, and it is gratifying to record a hope that an historical and interesting ancient bridge will thus receive proper treatment.

The glaring instance of a whole house covered with a permanent advertisement hoarding adjoining Bow Church in Cheapside has impressed the Committee as being a fitting opportunity for suggesting to the Council to urge upon the City of London, the London County Council and city and urban authorities generally the importance of acquiring powers to regulate advertisement abuses, with a view of rendering impossible the permanent defacement of streets and buildings.

The Committee has called the attention of the Council to the fact that no architectural authority has as yet been heard upon the London Traffic Commission, and has urged that steps should be taken so that the architectural aspects of street development and communication in Greater London should be adequately laid before the Commission.

Correspondence.

Borgund Church, Norway.

To the Editor of THE BUILDERS' JOURNAL.
LONDON.

SIR,—Referring to the paragraph on p. 192 of your issue for last week relating to the ancient church of Borgund, in Norway, said to be destroyed by fire, I have the pleasure of telling you that the burnt church is not the famous wooden one, but a stone church of the thirteenth century, of little importance but unfortunately having the same name as the more renowned timber structure.—Yours truly,

FINN DEHHE.

[The report was taken from the "Daily Graphic," who have now corrected it, stating that the burnt church was at Aalesund: the building was added to in the seventeenth century and repaired in 1869.—ED. B.J.]

Keystones.

South-Western Polytechnic, Chelsea.—The new buildings will be opened on May 6th by Earl Cadogan.

Change of Address.—Messrs. J. B. Colwill & Son, quantity surveyors, have removed from St. Albans to 60, Gladstone Road, Watford.

Hounslow Town Hall, which was sold last week for £4,550, was described in big type on the auctioneer's bill as "of a noble style of architecture."

The Surrey Theatre was sold by private treaty last week. It was opened in 1865 and stands on the site of a "royal circus" which was in full operation more than 120 years ago, but was destroyed by fire in 1805.

Edinburgh Architectural Association.—The annual general meeting of the Edinburgh Architectural Association was held last week, when the following office-bearers were appointed:—President, Mr. Harold C. Tarbolton; past-president, Mr. A. Hunter Crawford; vice-presidents, Mr. R. S. Lorimer and Mr. Alfred Grieg (junior section); honorary secretaries, Mr. William M. Page and Mr. Colin B. Cownie. Mr. Hunter Crawford made some remarks on the statutory qualification of architects. He said three classes of architects were in favour of it—those who believed that the architects and the public would benefit by such a scheme; those who urged that by it the architect's business as a business would be improved; and those who believed that the proposal should be accompanied by a scheme of examination and education. Against the scheme were those architects who went under the unfortunate title of "art architects," who did not see how they could test a student in the art of architecture apart from such questions as construction, sanitation, style and proportion. It had been suggested that the examiners should give an honours degree for what they considered to be the best design, and thus meet both views of the matter. Mr. Crawford said that he was not sufficiently sure of the advantage of making any effort to alter the present position, but he was more favourably inclined towards statutory examination than he was a year ago. That was due to the fact that he thought the education of the student would be more perfect, and that, therefore, he would be more qualified to practice.

Lambeth new Town Hall.—The Lambeth Borough Council have decided to erect a new town hall at the corner of Brixton Hill and Acre Lane.

New Royal College of Science, Dublin.—The foundation-stone of this building, of which Mr. Aston Webb, R.A., and Mr. T. Manly Deane are the joint architects, will be laid by His Majesty the King to-morrow.

War Office Barracks Construction Department.—Applications for appointment to the posts of Director of Barrack Construction and Deputy Director of Barrack Construction at the War Office should be forwarded to the Secretary of the War Office before April 30th. The salary of the Director of Barrack Construction will be £1,500 a year, and that of Deputy Director of Barrack Construction £1,200. Candidates must be fully qualified architects with a thorough knowledge of building.

At the Sixth International Congress of Architects recently held at Madrid resolutions were passed that "dead monuments," *i.e.*, those belonging to a past civilization or serving obsolete purposes, should be preserved only by such strengthening as was indispensable to prevent them falling into ruin; that "living monuments," *i.e.*, those which continue to serve the purposes for which they were originally intended, ought to be restored so as to continue to be of use, and that such restoration should be in the original style of the monument; and that the preservation and restoration of monuments should be entrusted only to State architects. The next International Congress will be held in London, in 1906.

The Institute of Sanitary Engineers.—At the recent examinations held in London and Liverpool in "Practical Sanitary Science" to qualify for admission to this Institute, fourteen candidates presented themselves at London, the following six passing and qualifying for admission as "Associates": O. Catlin, Clapham Common, S.W.; R. A. Skelton, Slough, Bucks; T. H. Wilson, Kilburn, N.W.; H. E. Booth, Banbury; F. Brittain, Twickenham; H. T. Brainsby, Walsall. At the Liverpool centre twelve candidates presented themselves, the following six passing, qualifying for "Associates": A. Holt, Bury; J. Hatton, Buxton; G. Brocklesby, Cartmel, Lancs; W. O. Thorp, Ripon; C. B. Goodyear, Manchester; J. Fletcher, Kirkham, Lancashire.

A United Methodist Free Church at Highams Park, E., was opened last week. The cost has been £1,828 for the first portion of a large scheme. The architects are Messrs. George Baines, F.R.I.B.A., and R. Palmer Baines, 5, Clement's Inn, Strand, London, W.C.

Mr. E. Roscoe Mullins, the well-known sculptor, has removed from St. John's Wood to Church End, Finchley, where he has built new studios and is now engaged on a large equestrian statue of the late Prime Minister of Nepal, to be cast in bronze and sent out to India.

A new Military Hospital for the London garrison has been erected on the Thames Embankment at Millbank, and will be opened shortly. It is built of red brick and Portland stone, with a frontage of 600ft. and an area of 3½ acres. There are five blocks traversed by a corridor. It is understood that a nurses' home and an Army medical college will also be erected at Millbank.

A Photographic Survey of Sussex is proposed by the Sussex Archaeological Society, similar to that already working in Warwickshire and Surrey. The Society has recently obtained about 400 negatives, taken twenty or thirty years ago, of churches of Western Sussex, many of which have since been rebuilt or much altered. These negatives form the nucleus of the collection which the committee hope to make. The hon. secretary is Mr. J. C. Stenning, Steelcross House, Tunbridge Wells.

Manchester Society of Architects.—The fortieth annual report of the Council, to be submitted at the annual general meeting to be held to-morrow, refers to the additions which have been made to the Society's articles of association with a view to facilitating the alliance of neighbouring societies of architects; the first application has come from the Blackpool and Fylde Architectural Association, which is now allied with the Manchester Society. In the reference to the establishment of a Chair of Architecture at the Victoria University of Manchester it is stated that a fund is being raised with the object of presenting it to the endowment fund of the School; up to the present only £200 has been subscribed and members are reminded that the fund is still open. The Society is represented on the Advisory Committee of the School by the president, Mr. J. W. Beaumont, F.R.I.B.A., and Mr. Paul Ogden, F.R.I.B.A. In the report of the

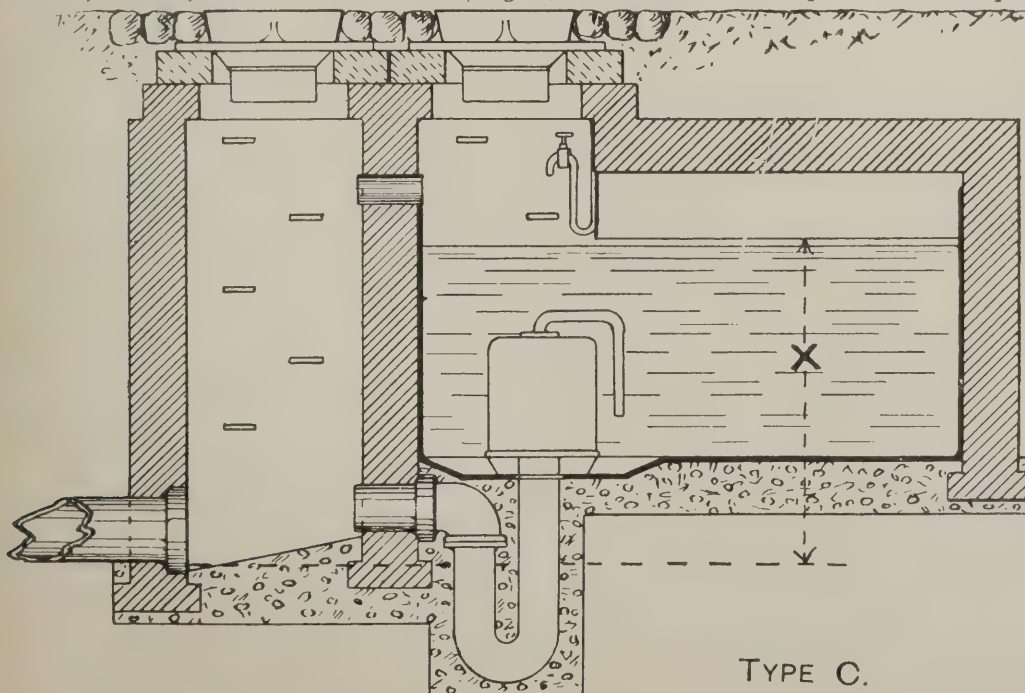
Library Committee we notice Mr. Banister Fletcher's name is six times incorrectly spelt with two "n's."

SEWER FLUSHING.

THE necessity for the systematic flushing of sewers is now recognized as essential to their efficiency. Flushing by water-carts and by hand-valves is expensive and troublesome, while the holding-up of sewage in manholes or chambers, and discharging it in bulk by the release of a penstock, tends to foul rather than cleanse a sewer, and allows gas to collect. The best method is to employ concrete and brickwork chambers provided with syphons which may discharge at certain intervals automatically, day or night, without oversight and at minimum cost. The Adams syphons, made by Messrs. Adams-Hydraulics Ltd., of York, Westminster, &c., are held in first favour, for sixty-four per cent. of the total syphons in use in this country are supplied by this firm. A new pamphlet entitled "Sewer Flushing" has just been issued by Messrs. Adams-Hydraulics, Ltd., which should be of great assistance to municipal engineers and others, giving as it does the results of this firm's unique experience of the subject. We reproduce one of the illustrations from this pamphlet showing Adams's latest improved Standard sewer-flushing syphon, type C. This syphon has been improved from time to time and is now most reliable, very powerful, and will work with any feed. It will be noticed that the outlet is provided with a special swivel arrangement, so that it may be turned in any direction to meet the sewer, regardless of angle. The type of chamber shown, having arched roof for roadways, has been widely adopted. In one type illustrated in this pamphlet the swivel outlet has a chain attachment by means of which it may be turned from one drain to another, as desired, where the syphon has to do duty for two or more branch sewers. Other types of syphons are shown. An automatic flushing chamber should be placed at the head of every branch sewer, and such chambers should be freely ventilated, as also the sewer itself at the syphon outlet. In connection with this we may say that Messrs. Adams have recently introduced a new syphon with a self-contained vent, inspection and overflow pipe on the outlet bend. This pipe ensures (1) the ventilation of the sewer at the proper place—a matter frequently overlooked in the designing of flushing chambers and the fixing of syphons, and (2) it also entirely saves the cost of a separate manhole or overflow.

The pamphlet concludes with a few concise notes on the fixing of syphons, which will be valuable to all intending users. Copies of the pamphlet may be had free on application.

Mr. S. H. Adams, A.M.I.C.E., managing director of the firm, and the inventor of the original deep-trap syphon, is also the patentee of the multiple contact system of sewage-disposal, a system combining the best features of the continuous and contact principles; it may be seen in operation at the Sutton (Surrey) sewage-disposal works. Messrs. Adams-Hydraulics, Ltd., are also makers of apparatus—automatic and non-automatic—of every description for contact and continuous sewage filters, having completed over 400 installations of various types throughout the country. They are also large manufacturers of general sewerage ironwork and sewage-lifting plant.



TYPE C.

Complete List of Contracts Open.

DATE OF DELIVERY	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
BUILDING:			
April 28	Witley, Surrey—Inn	Surrey Public House Trust Co., Ltd.	E. L. Lunn, 56 High Street, Guildford.
" 28	London, N.E.—Underground Convenience	Hackney Borough Council	N. Scorgie, Borough Surveyor, Town Hall, Hackney, N.E.
" 28	Buckfastleigh—Three Cottages	Co-operative Society	A. Warren, Architect, Fore Street, Buckfastleigh.
" 28	Bradfield, Essex—Hotel, &c.	Steward & Patterson, Ltd.	J. W. Start, Architect, Colchester.
" 28	Ballyshannon, Ireland—Station Buildings	Donegal Railway Co.	A. M' C. Stewart 5 Castle Street, Londonderry.
" 28	Thurstone, near Penistone, Yorks—Church	Corporation	W. Morton, 27 John Street, Sunderland.
" 28	Leamington, Spa—Additions to Cottage	Corporation	Borough Engineer, Town Hall, Leamington.
" 29	Rashcliffe, Huddersfield—Chapel, &c.	Corporation	B. Stocks, Architect, St. Peter's Street, Huddersfield.
" 29	Leigh, Lancs—Basement	Rhondda U.D.C.	J. C. Prestwich, Architect, Bradshawgate Chambers, Leigh.
" 29	Blaenclydach, Wales—School	Director of Works Department, Admiralty, 21 Northumberland Avenue, London, W.C.	J. Rees, Architect, Hillside Cottage, Pentre.
" 29	Whitby and Robinhood's Bay, Yorks—Coastguard Stations (two contracts).	—	Director of Works Department, Admiralty, 21 Northumberland Avenue, London, W.C.
" 29	Cork—Thirty Houses	—	W. H. Hill & Son, 28 South Mall, Cork.
" 29	Stamfordham and Bellingham, Northumberland—Police Station and Court House.	—	J. A. Bean, County Surveyor, Moot Hall, Newcastle-on-Tyne.
" 30	Grimsby—Showrooms	Gas Company	H. Heap, Architect, Osborne Chambers, Grimsby.
" 30	Halifax—Works and Residence	Waterworks Co.	C. F. L. Horsfall & Son, Architects, Lord Street Chambers, Halifax.
" 30	Beccles—Water Tower	Urban District Council	J. P. Larkman, Secretary, Beccles Waterworks Office, Beccles.
" 30	Deal—Shelter Seats	School Board	T. C. Golder, 23 Queen Street, Deal.
" 30	Montrose, Scotland—Alterations to School	—	J. R. Findlay, Solicitor, Montrose.
" 30	Pontypridd—Two Houses	District Co-oper. Society, Ltd.	A. O. Evans, Architect, Pontypridd.
" 30	Slough—Shop	Urban District Council	W. T. Whalley, 190 High Street, Slough.
" 30	Walmer, Kent—Sheltered Seat	Education Committee	H. W. Barker, Surveyor, Council Offices, Liverpool Rd., Walmer.
" 30	Gloucester—Schools	United Gas Light Co.	W. B. Wood, 12 Queen Street, Gloucester.
May 2	Shetheld—Workshops and Stores	—	J. W. Morrison, Co.'s Engineer, Gas Co.'s Offices, Commercial Street, Sheffield.
" 2	Edinburgh—Building Stones	Corporation	W. R. Herring, Chief Engineer, New Street Works, Edinburgh.
" 2	Bandon, Ireland—House	M. C. Hickey	R. Walker & Son, 17 South Mall, Cork.
" 2	Barry, Cardiff—Alterations, &c., to School	Urban District Council	G. A. Birkenhead, Architect, Caledonian Chambers, Cardiff.
" 2	Beccles—Alterations, &c., to Premises	Working Men's Co-oper. Assoc.	A. Fells, Architect, London Road, Beccles.
" 2	Cwmparc, Wales—Two Houses	Jones & Thickens	D. Jones, 231 Park Road, Cwmparc.
" 2	Cwmparc, near Treorchy, Wales—Sixteen Houses	Building Club	Park Hotel, Cwmparc.
" 2	Leeds—Rebuilding of Hotel and Shops, &c. (two contracts)	—	T. Winn & Sons, 92 Albion Street, Leeds.
" 2	Sedburgh—Classrooms, &c.	—	Wright & Son, Surveyors, Lancaster.
" 3	Camerton, Cumberland—Six Houses	Progressive Building Club	W. G. Scott, Architect, Victoria Buildings, Workington.
" 3	Cross Keys, Mon.—Nineteen Houses	Urban District Council	R. L. Roberts, Architect, Abercarn.
" 3	Millnow, Lancs—Wall	—	W. H. Foster, Clerk, Council Offices, Millnow.
" 3	Windsor—Shop Fittings	Commissioners of H.M. Works, &c.	S. M. Wyborn, Architect, Park Chambers, Sheet Street, Windsor.
" 3	Woodford Green—Post Office	School Board	J. Wager, H.M. Office of Works, Storey's Gate, London, S.W.
" 3	Holyhead—School	Electric Lighting Committee	R. E. Pritchard, Clerk, Drug Hall, Holyhead.
" 3	Middlesbrough—Electricity Works	Portsea Island Mutual Co-op. Soc., Ltd., Committee	F. Baker, Borough Engineer, Municipal Buildings, Middlesbrough.
" 4	Portsmouth—Business Premises	Essex County Council	G. E. Smith, 145 Victoria Road North, Portsmouth.
" 4	Southend-on-Sea—Court Room, &c.	—	F. Whitmore, County Architect, Duke Street, Chelmsford.
" 4	Shotley Bridge—Schools, &c.	Chelmsford R.D.C.	W. T. Spence, Architect, Shotley Bridge.
" 5	Great Baddow, Essex—Engine House	Commissioners of H.M. Works, &c.	J. Dewhurst, Surveyor, Avenue Chambers, Chelmsford.
" 5	Stirling—Extension of Post Office	Guardians	Secretary, H.M. Office of Works, &c., Storey's Gate, London, S.W.
" 6	Poplar, E.—Alterations and Additions to Houses	—	J. & W. Clarkson, 136 High Street, Poplar, E.
" 7	Ruthin, Wales—Alterations, &c., to Premises	Corporation	J. Hughes, Architect, Denbigh.
" 9	Kingston-upon-Thames—Mortuary	Southall-Norwood U.D.C.	Borough Surveyor, Kingston-upon-Thames.
" 9	Southall—Library	Commissioners of H.M. Works, &c.	R. Brown, Architect, Public Offices, Southall.
" 12	Liverpool—Sorting Office	Corporation	Mr. Cropper, H.M. Office of Works, Liverpool.
" 13	Rotherham—Hospital, &c.	—	J. Platts, County Borough Architect, High Street, Rotherham.
" 14	Totland Bay, Isle of Wight—Enlargement and Alterations of Church.	—	Mayston & Edlison, 7 Great James Street, Bedford Row, W.C.
" 16	Sutton Coldfield—Town Hall and Fire Station	—	P. Stone, Architect, Newport, Isle of Wight.
July 23	Rio-de-Janeiro—Theatre	—	Commercial Intelligence Branch, Board of Trade, 50 Parliament Street, S.W.
No date	Orpington, Kent—Two Pairs of Villas	—	Fitch & Co., 43 Bedford Row, W.C.
ENGINEERING:			
April 28	Bradford—Reservoir, &c.	Corporation	Waterworks Engineer, Town Hall, Bradford.
" 28	London, N.—Fire Mains, &c.	St. Mary (Islington) Guardians	W. Smith, 65 Chancery Lane, W.C.
" 28	Manchester—Electric Plant	Waterworks Committee	Secretary, Waterworks Offices, Town Hall, Manchester.
" 29	Flamborough, Yorks—Well	Bridlington R.D.C.	Elliott & Brown, Engineers, Burton Buildings, Parliament Street Nottingham.
" 30	Golspie, Scotland—Bridge	Sutherland County Council	A. Argo, County Clerk, Golspie.
" 30	Liscannor, Ireland—Extension of Groyne, &c.	Urban District Council	H. Williams, Secretary, Office of Public Works, Dublin.
" 30	Royton, near Oldham—Tramway	Electric Lighting Committee	R. P. Walker, 66 Victoria Street, Westminster.
" 30	Aberdeen—Condensing Plant	—	J. A. Bell, City Electrical Engineer, Electricity Works, Millburn Street, Aberdeen.
May 2	Bray, Ireland—Electrical Supplies	Urban District Council	P. Macdonnell, Clerk, Town Hall, Bray, Ireland.
" 2	Thornhill, nr. Dewsbury—Abutments, &c.	Town Council	S. W. Parker, Surveyor, Council Offices, Thornhill, nr. Dewsbury.
" 3	Dover—Groyne	Gt. Southern & Western Ry. Co.	H. E. Stilgoe, Borough Engineer, Town Hall, Dover.
" 4	Limerick—Roof	Harbour Trustees	Co.'s Engineer, Inchicore, Dublin.
" 5	Swansea—Hydraulic Accumulator, Cranes, &c. (two contracts).	—	A. O. Schenk, Engineer, Harbour Offices, Swansea.
" 6	Broadstairs—Gasholder	Ash-next-Sandwich Gas Co.	F. Higginson, Engineer, Gas Office, Alexandra Road, Broadstairs.
" 7	Egremont, Cheshire—Electric Plant	Urban District Council	J. A. Crowther, Engineer, Seaview Road, Liscard, Cheshire.
" 9	Dublin—Electrical Plant	Lighting Committee	S. Hart, City Engineer, City Hall, Dublin.
" 9	Edinburgh—Gas Plant, &c.	Corporation	W. R. Herring, Chief Engineer, New Street Works, Edinburgh.
" 9	St. Clement, Cornwall—Filter Beds, &c.	Truro Water Co.	J. Mansergh & Sons, 5 Victoria Street, Westminster.
" 9	Natal, South Africa—Electric Telpherage	Government	Sir Walter Peace, 26 Victoria Street, London, S.W.
" 9	Wesham, Lancs—Warming and Hot-water Supply	Foyle Union Guardians	Hayward & Harrison, Architects, Accrington.
" 14	Gills Haven, Caithness, N.B.—Pier	County Council	E. K. Carmichael, 8 North Bank Street, Edinburgh.
" 17	Kilmarnock—Electric Plant	Corporation	Kennedy & Jenkin, 17 Victoria Street, Westminster, S.W.
" 17	London, S.E.—Switchgear	London County Council	Tramway Offices, 303 Camberwell New Road, S.E.
" 18	London, W.—Electric Plant	Hammersmith Borough Council	G. G. Bell, 57 Fulham Palace Road, W.
" 20	Ayr, Scotland—Electrical Plant	District Lunacy Board	W. M. Stewart, 55 West Regent Street, Glasgow.
" 24	London, N.—Pumping Machinery, &c.	Tottenham and Wood Green Joint Drainage Committee	W. H. Prescott, 712 High Road, Tottenham.
FURNITURE:			
May 3	Leyton—School Furniture	Education Committee	W. Jacques, 2 Fen Court, Fenchurch Street, E.C.
IRON AND STEEL			
April 28	Amsterdam—Steel Rails	Dutch Iron Rly. Co.	Commercial Department, Board of Trade, London.
" 29	Fort Elizabeth, South Africa—Pipes, &c.	Town Council	Davis & Soper, 54 St. Mary Axe, London, E.C.
" 30	Maldon, Essex—Water Mains	Corporation	T. R. Swales, Borough Engineer, Municipal Offices, Maldon.
" 30	Wolverhampton—Sanitary Pans and Dust Bins	Gas Committee	Manager, Team Dept., Crown Street, Wolverhampton.
May 2	Rotherham—Meters	Southern Mahratta Rly. Co., Ltd.	Engineer, Gas Offices, Rotherham.
" 3	London, E.C.—Railway Stores	Waterworks Committee	E. Z. Thornton, Secretary, 46 Queen Anne's Gate, Westminster.
" 9	Derby—Pipes	Wallasey U.D.C.	J. Ward, Borough Surveyor, Babington Lane, Derby.
" 9	Egremont, Cheshire—Stores	Sanitary Works Committee	Manager, Egremont Ferry, Cheshire.
" 10	Warrington—Sanitary Pails	Main Sewerage Board	Cleansing Superintendent, Central Sanitary Depot, Howley, Warrington.
" 10	Richmond, Surrey—Railway Stores	—	W. Fairley, Engineer, West Hill Road, Kew Gardens, S.W.
PAINTING AND PLUMBING:			
May 4	Kingston-upon-Thames—Painting	Guardians	W. H. Hope, Architect, Seymour Road, Hampton Wick.
" 3	Blaencelyn, Wales—Painting	—	T. James, Flynnycyf, Verwick.
" 6	Dartmouth—Paint, &c.	Totnes Port Sanitary Authority	S. J. Pope, Clerk, Duke Street, Dartmouth.
" 9	Egremont, Cheshire—Paints	Wallasey U.D.C.	Manager, Egremont Ferry, Cheshire.

Complete List of Contracts Open - continued.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
ROADS AND CARTAGE:			
April 28	Luton—Paving, &c.	Town Council	Borough Surveyor, Town Hall, Luton.
" 28	Dewsbury—Paving, &c.	Corporation	Borough Surveyor, Town Hall, Dewsbury.
" 28	Gateshead—Paving	Corporation	J. Bower, Borough Engineer, Town Hall, Gateshead.
" 28	Chelmsford—Materials	Essex County Council	Chief Surveyor, Essex County Council, Chelmsford.
" 29	Bexhill, Sussex—Macadam	Corporation	G. Ball, Borough Surveyor, Bexhill, Sussex.
" 30	Great Driffield, Yorks—Whinstone	Urban District Council	G. B. Tonge, Clerk, Great Driffield.
" 31	Thirsk, Yorks—Whinstone and Slag	Rural District Council	C. McC. Swarbrick, Clerk, Thirsk.
May 2	Newmarket—Metalling	Rural District Council	S. J. Ennion, Clerk, Deva Chambers, Newmarket.
" 2	Frinton-on-Sea—Road Works	Urban District Council	E. M. Bate, Surveyor, Frinton-on-Sea.
" 2	East Dereham—Granite	Urban District Council	H. G. Himson, Surveyor, Theatre Street, East Dereham.
" 3	Bromley—Materials	Borough Council	Borough Engineer, Municipal Offices, Bromley.
" 3	Windsor—Making-up, &c.	Town Council	Borough Surveyor, Alma Road, Windsor.
" 3	Leyton—In-Situ Concrete Paving, &c.	Education Committee	W. Jacques, 2 Fen Court, Fenchurch Street, E. C.
" 3	King's Lynn—Road Materials	Corporation	H. J. Weaver, Borough Surveyor, King's Lynn.
" 3	Airdrie, Scotland—Materials	Town Council	C. R. Maxwell, Borough Surveyor, Municipal Buildings, Airdrie.
" 4	London, N.E.—Materials and Paving	Wanstead Urban District Council	C. H. Bressey, Surveyor, Council Offices, Wanstead, N.E.
" 5	Andover—Materials	Rural District Council	J. Wormald, District Surveyor, Andover.
" 5	London, S.E.—Road Rollers	Camberwell Borough Council	W. Oxtoby, Borough Engineer, Town Hall, Camberwell, S.E.
" 5	Hanwell, W.—Making-up Streets	Urban District Council	S. W. Barnes, Surveyor, Hanwell.
" 10	West Ham—Making-up Street	Borough Council	J. G. Morley, Borough Engineer, Town Hall, West Ham, E.
No date	Orpington, Kent—Road	—	Fitch & Co., 43 Bedford Row, London, W.C.
SANITARY:			
April 28	Edinburgh—Sewer	Council	Burgh Engineer, Edinburgh.
" 28	Chelmsford—Stoneware Pipes, &c.	Essex County Council	Chief Surveyor, Essex County Council, Chelmsford.
" 28	Bexhill, Sussex—Sewer	Corporation	G. Ball, Borough Surveyor, Town Hall, Bexhill.
" 30	Bollington, near Macclesfield—Sewerage Works	Urban District Council	W. H. Radford, Engineer, Albion Chambers, King St., Nottingham
TIMBER:			
April 28	Southampton—Timber	—	Director-General, Ordnance Survey Office, Southampton.
" 28	London, N.E.—Hardwood Paving	Hackney Borough Council	N. Scorgie, Borough Surveyor, Town Hall, Hackney, N.E.
" 29	Hull—Hardwood Planks	Corporation	A. E. White, City Engineer, Town Hall, Hull.
May 2	London, S.E.—Timber	Guardians	H. C. Moit, Clerk, Union Offices, 286 High Street, Lewisham, S.E.
" 9	Egremont, Cheshire—Timber	Wallasey U.D.C.	Manager, Egremont Ferry, Cheshire.

List of Competitions Open.

DATE OF DELIVERY.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	DEPOSIT REQUIRED FOR CONDITIONS, &c.	BY WHOM ADVERTISED.
April 30	Newcastle-upon-Tyne—Grammar School	£100, £50, £25.	£1 is.	H. J. Criddle, 2 Collingwood Street, Newcastle-upon-Tyne.
May 9	Barnet—Hospital	—	—	C. D. Byfield, 16 High Street, Barnet.
" 31	Stamford, Lincs—Public Library	£25, £15, £10.	£1 is.	C. Atter, Town Clerk, Town Hall, Stamford.
" 31	New Somerby, Grantham—Church	£10	—	Rev. H. H. Sursey, Dudley Road, Grantham.
" 31	Grantham—Church	£10.	—	H. H. Sursey, Dudley Road, Grantham.

Coming Events.

Wednesday, April 27.

ARCHITECTURAL ASSOCIATION (Discussion Section).—Mr. R. Crawford Smith on "The Advantages of a Provincial versus a London Training," at 7.30 p.m.
 SANITARY INSTITUTE (Inspections and Demonstrations for Sanitary Officers, Part II).—Inspection and Demonstration at the Metropolitan Cattle Market, York Road, N., at 2 p.m., conducted by James King, M.R.C.V.S.
 INSTITUTION OF CIVIL ENGINEERS.—Students' Visit to the Metropolitan Railway Electric Power Station at Neasden, at 2.30 p.m.
 GEOLOGICAL SOCIETY OF LONDON.—Meeting at 8 p.m.
 UNIVERSITY COLLEGE, LONDON.—Prof. F. M. Simpson on "The History of Architectural Development"—II., at 11 a.m.

Thursday, April 28.

SOCIETY OF ANTIQUARIES.—Meeting at 8.30 p.m.
 ROYAL INSTITUTION.—Professor Dewar on "Dis-sociation"—III., at 5 p.m.
 INSTITUTION OF CIVIL ENGINEERS.—Students' Visit to Walton and Hampton to inspect the new Reservoirs and Pumping Station of the Southwark and Vauxhall Water Co.
 INSTITUTION OF ELECTRICAL ENGINEERS.—Mr. C. H. Merz and Mr. W. McLellan on "Power Station Design," at 8 p.m.
 MANCHESTER SOCIETY OF ARCHITECTS.—Annual General Meeting at 6.30 p.m. Election of Officers, &c.

Friday, April 29.

ROYAL INSTITUTION.—Dean Robinson on "Westminster Abbey in the Early Part of the Seventeenth Century," at 9 p.m.
 INSTITUTION OF CIVIL ENGINEERS.—Students' Visit to the Works in progress at the new Thorough-fares between Holborn and the Strand in course of construction, at 11 a.m. Students' Banquet at Balmoral Rooms, Trocadero, at 7 p.m.
 JUNIOR INSTITUTION OF ENGINEERS.—Visit to the Cassland Road Higher Grade Board School, Wells Street, Hackney, to inspect the Heating and Ventilating Systems, at 6.30 p.m.

Saturday, April 30.

ROYAL INSTITUTION.—Mr. Cyril Davenport, F.S.A., on "Jewellery"—III., at 3 p.m.
 EDINBURGH ARCHITECTURAL ASSOCIATION (Associates' Section).—Visit to Roslin.
 SANITARY INSTITUTE.—A Discussion on "Food and Meat Inspection" at the Parkes Museum, opened by Colonel J. Lane Nutter, M.D., and Mr. W. Hunting, F.R.C.V.S., at 11 a.m. In the afternoon a visit will be made to the Metropolitan Cattle Market, Islington.

Monday, May 2.

SOCIETY OF ARTS (Cantor Lectures).—Prof. R. Langton Douglas, M.A., on "The Majolica and Glazed Earthenware of Tuscany: II.—The Glazed Earthenware of Florence and the Works of the Della Robbia," at 4.30 p.m.
 ROYAL INSTITUTION.—Annual Meeting at 5 p.m.
 SANITARY INSTITUTE.—Annual Dinner at White-hall Rooms at 7.30 p.m.
 SOCIETY OF ENGINEERS.—Mr. A. S. E. Ackermann, A.C.G.I., A.M.I.C.E., on "British and American Coal-cutting Machines," at 7.30 p.m.—Mr. Perry F. Nussey on "A Jubilee Retrospect" at 7.30 p.m.

Tuesday, May 3.

ROYAL INSTITUTION.—Mr. L. Fletcher on "Meteorites," at 5 p.m.

Wednesday, May 4.

SOCIETY OF ARTS.—Mr. William Pollard Digby on "Statistics of the World's Iron and Steel Industries," at 8 p.m.

Thursday, May 5.

IRON AND STEEL INSTITUTE.—Annual Meeting at the Institution of Civil Engineers, at 10.30 a.m. (First day.)

Friday, May 6.

JUNIOR INSTITUTION OF ENGINEERS.—Mr. A. W. Young on "The Design of a Dry Dock."
 ARCHITECTURAL ASSOCIATION.—Mr. A. E. Munby on "The Value of Science in an Architectural Curriculum," at 7.30 p.m.
 IRON AND STEEL INSTITUTE.—Annual Meeting at Institution of Civil Engineers at 10.30 a.m. (Second day.)

Saturday, May 7.

EDINBURGH ARCHITECTURAL ASSOCIATION.—Visit to the Carnegie new Baths and Gymnasium, Dunfermline (Hippolyte J. Blanc, architect) and Dunfermline Abbey.
 ARTISTS' BENEVOLENT INSTITUTION.—Annual Dinner at Whitehall Rooms at 6.30 p.m.
 UNIVERSITY COLLEGE, LONDON.—Prof. F. M. Simpson on "The History of Architectural Development"—III., at 11 a.m.

The Parish Church of Islington has been restored under the direction of Sir Arthur Blomfield & Sons, and will be consecrated on April 30th by the Bishop of London. The high-backed pews, the three-decker and other relics of antiquity have all gone, and at the east end a chancel, extending almost the entire width of the church, has been built over a part of the disused churchyard.

Bankruptcies.

(Abbreviations: R.O.—receiving order; P.E.—public examination; C.C.—county court; O.R.—official receiver; Adj.—Adjudication.)

DURING THE WEEK ending April 22nd thirty-one failures in the building and timber trades in England and Wales were gazetted.

R. DUNN, builder, Shildon. Adj. April 12th.
 W. ROLES & SONS, builders, Romsey. Adj. April 14th.
 ROGERS, VINCENT & CO., architects and surveyors, Wimbledon. R.O. April 14th.
 H. WILLIAMS, builder, Bonymen, near Swansea. R.O. April 12th.
 J. PARKER, builder, Has Ings. Liabilities £5,029; assets £3,956; deficiency £1,933.
 C. BALL, engineer, St. Leonard's. Liabilities £1,337; assets £925.
 M. ABRAHAMS, builder, Manor Park. Liabilities £2,720; assets £1,73.
 CARTER & ELLIS, builders, Plaistow. R.O. April 12th. First meeting, London Bankruptcy Court, April 28th, at 12. P.E., same, May 11, at 11.30.
 W. DUDLEY, builder, Prittlewell. First meeting, 14, Bedford Row, London, W.C., April 27th, at 3. P.E., Chelmsford Shirehall, May 4th, at 10.
 C. E. HOWORTH, builder and contractor, Birkdale. First meeting, O.R.'s, Liverpool, April 27th, at 2.30. P.E., Liverpool C.C., May 5th, at 11.
 T. W. ROOME, brick manufacturer, Rawmarsh. Liabilities £7,241; £4,477 covered by securities; assets £1,692.
 GREEN & CO., builders and contractors, Rotherham. Gross liabilities £17,584; £9,312 covered by securities; £8,110 to rank for dividend; assets £2,334.
 G. H. MAY, joiner and builder, Rotherham. Liabilities to rank for dividend £1,487; assets £326. Dividends of 1s. 6d. and 31d. in the £ paid. Discharge granted.

C. B. ROBERTS & CO., builders and contractors, Totter-down Fields Estate, Tooting. Gross liabilities £27,124; £12,536 expected to rank; assets £10,562. Failure attributed to want of capital to proceed with various contracts. In November, 1901, the debtor contracted to build for the L.C.C. 270 model dwellings for £66,000 on the Totterdown Estate, 100ting; these appear to have been practically completed by him. In a supplemental contract he agreed to erect twenty more for £7,100, and estimates that it will cost £250 to complete this contract. In December, 1903, he entered into a further contract with the same body for the erection of 414 model dwellings for £120,000, and certain effects are claimed by the Council until the contract has been completed.

Advertising Notes.

It is to the interest of every advertiser and every publisher to point out the folly of false advertising, and to rid the public press of every statement which smacks of untruth. Untruthful and exaggerated statements poison the public mind with the thought that there is no honesty in advertising and in business. The honest advertiser and the honest business man is making his way to the front, and every day shows a larger recognition of his true position in the business world.

Appointments Wanted.

The charge for Advertisements under this heading is 1s. 6d. per insertion not exceeding four lines, and 6d. per line afterward, prepaid. Three insertions may be had for the price of two. Advertisements must reach the Office not later than 5 o'clock on Monday.

A CARPENTER and JOINER, of good practical experience in the building trade, seeks position as Foreman in joiner's shop or as Clerk of Works. Excellent qualifications and references.—Apply D., 61, Mysore Road, Lavender Hill, London, S.W. 326

ADVERTISER desires ENGAGEMENT in Metropolitan Architect's office. Gold, Bronze, Medallist. King's prizeman. Indoor and outdoor routine.—W., 197, Richmond Road, Cardiff. 315

ARCHITECT and SURVEYOR'S Assistant desires engagement. Nine years' varied experience in good office, competent draughtsman, designer and quantity surveyor. Moderate salary—temporary or permanent.—BETA, 73, Queen's Walk, Nottingham. 320

ARCHITECT and SURVEYOR'S ASSISTANT desires RE-ENGAGEMENT. Isolation hospital work, working drawings, details, quantities, surveys, &c. Good testimonials. Moderate salary.—Box 351, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

ARCHITECT AND SURVEYOR (33) having small Practice near London desires engagement with view to partnership and amalgamation of own practice. Good offices in rising town.—Apply Box 316, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

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ARCHITECT and SURVEYOR, young, experienced, desires engagement as Managing Assistant with view to partnership with old-established firm—capable in all branches.—Box 314, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

ARCHITECT'S ASSISTANT, age 21, requires engagement, five years' experience, good draughtsman, details, surveys and levelling.—D., c/o BARROWCLIFF and ALLCOCK, Town Hall Chambers, Loughborough. 321

ARCHITECT'S ASSISTANT desires ENGAGEMENT. Surveying, levelling, working, detail, drawings, good draughtsman, 5½ years' experience. Age 24. 30s.—B., 124, Glenhorn Road, Newcastle-on-Tyne. 319

ARCHITECT'S ASSISTANT (23) desires re-engagement. Six years' Scotch and English experience. Drawings, details, specifications, surveys, levels, competitions, &c. Salary secondary.—Box 318, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

ARCHITECT'S ASSISTANT, good experience, requires ENGAGEMENT; contract drawings, details, surveying, assistance with quantities, &c.—Box 347, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

ARCHITECT'S good all-round Assistant disengaged, well up in Board School design and quantities.—Box 313, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

ARCHITECT has TIME to ASSIST others with working drawings, details, specifications, and quantities. Special terms for competitions. Good general experience.—WM. S. WILSON, Mount Pleasant Road, Tottenham. 348

ARCHITECT'S IMPROVER or JUNIOR ASSISTANT (19), Prob. R.I.B.A., neat, accurate draughtsman, London experience, excellent references.—Box 350, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

ARCHITECT'S JUNIOR ASSISTANT disengaged. Neat and accurate draughtsman. Well up in surveying, levelling, and knowledge of quantities. Excellent references.—N. H., 7, Goldsmith Road, Leyton. 325

ARCHITECT'S JUNIOR ASSISTANT (20), just completed five years' in A.R.I.B.A.'s office, desires engagement, good reference.—G. H., 12, Cliff Terrace, Hornsea. 340

ARCHITECT'S JUNIOR ASSISTANT desires re-engagement (age 22), 7½ years' country experience, working drawings, details, perspectives, neat draughtsman, good knowledge of quantities.—F. PRICE, 2, Farfields, Dovey, Stafford. 342

ASSISTANT (Architect's and Surveyor's) DISENGAGED. Working and detail drawings, specifications, quantities, surveying, and levelling. Excellent references.—Apply HOLLINGWORTH, Dry Sandford, Abingdon. 345

CLERK OF WORKS desires a SITUATION. Age 36, married. Has been employed for some years on the Welbeck Estate, and is highly recommended by the Duke of Portland.—Apply THOMAS H. PENNINGTON, Ford Ville, Carlton Road, Worksop, Notts; or to Mr. WARNER TURNER, Agent, Welbeck, Worksop, Notts. 312

CLERK OF WORKS, disengaged, experienced, practical, good draughtsman, quantities. Just completed 3 years' erection of 1st class church. Age 35. Good references.—Box 324, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

DRAUGHTSMAN & GENERAL CLERK (20), disengaged; two years' architectural experience; gentlemanly and of good appearance; salary small.—Box 317, BUILDERS' JOURNAL Office, 6 Great New Street, Fetter Lane, E.C.

ESTATE AGENTS, ARCHITECTS, SURVEYORS.—Smart, energetic, businesslike young man desires change. Drawings, survey and level, specifications and quantities, well up in speculative building and estate work.—Box 339, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

ESTATE or BUILDER'S MANAGER (34) thoroughly efficient in all branches, outdoor or indoor. Good references. Moderate salary.—H. JAMES, Midgham, Reading. 341

FOREMAN JOINER, young, disengaged, well up in architecture. Certified reference; been master man.—Address Box 336, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

FOREMAN MASON FIXER seeks RE-ENGAGEMENT. Quick and reliable. Good references.—Address A. E. J., 148, Battersea Park Road, S.W. 343

GENERAL FOREMAN seeks RE-ENGAGEMENT. Good manager of men. Bricklayer by trade. Good references from last and previous employers.—Address A. G., 58, Strone Road, Forest Gate, E. 349

GENERAL FOREMAN (39) seeks ENGAGEMENT. New or alteration works. Practical and energetic. Good manager. Carpenter and joiner. Abstainer. Long references.—F. E., Homestead, Cromwell Road, Hounslow, Middlesex. 346

GENERAL FOREMAN seeks RE-ENGAGEMENT; used to jobs at competitive prices; just finished large contract.—Box 361, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

MACHINIST (27), wants job, over and under saw bench, any planers, fourcutter; improver on spindle. Had charge small plant; town or country, 8½d.—MACHINIST, 28, Blackhorse Road, Walthamstow. 310

MACHINIST wants SITUATION.—Spindle tenoner, planer, saws, &c. Used to quick joinery trade. Attend gas engine. Good references, wages, 8d. per hour.—Write C. M., 37, Frensham Road, Frattton, Hants. 332

PLUMBER, GAS and HOT WATER FITTER, wants JOB. New work or jobbing day or piece; 11 years' experience. Distance no object.—T. C., 89, Roman Road, Barnsbury, N. 358

PROFESSIONAL ASSOCIATE OF THE SURVEYORS' INSTITUTION requires engagement as Surveyor or Assistant Engineer. Five years' experience in land agent and surveyor's office, and five years' under engineer of sewage works. Well up in land surveying and levelling, mathematics and applied mechanics.—Box 333, BUILDERS' JOURNAL Office, 6, Great New Street, E.C.

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TO CONSTRUCTIONAL ENGINEERS and BUILDERS.—Wanted by Mechanical Engineer of long standing, the ERECTION of all kinds of iron work, roofs, columns, and girders, fireproof floors, bridge work, &c. Either superintend or quote price.—J. H. W., 1, Grenard Road, Peckham, S.E. 338

TO W.D. or ADMIRALTY CONTRACTORS.—GENERAL FOREMAN requires SITUATION. Well-up in schedule. Four years in charge of specials, measure and abstract. Abstainer; age 27.—H. C., 9, Page's Lane, Muswell Hill, Hornsey, N. 357

TO LARGE EMPLOYERS OF LABOUR. THE NATIONAL ASSOCIATION for RESERVE SOLDIERS, 119, Victoria Street, S.W., tel. 367, Westminster, telegrams, "Employons," London, supplies men of good character only, as Porters, Labourers, Caretakers, Carmen, Night Watchmen, Timekeepers, Carpenters, Masons, Bricklayers, Navvies, Handy Men, &c. Characters up to date. No fees.—Apply SECRETARY, as above.

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BUILDER'S CLERK.—Must have experience of general routine of builder's office, be capable of taking off quantities, measuring up work, etc. Particulars of experience, age, and salary required to J. ROTHWELL & Sons, Builders and Contractors, St. Helens, Lancs.

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PUPIL.—An Architect and Surveyor has a VACANCY in busy City office for a well-educated youth as articled pupil.—Apply "Architect," care of BURBRIDGE & Co., 62, Moorgate Street, E.C.

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R.I.B.A. EXAMS.—Personal and Correspondence tuition; courses of any duration. Apply for syllabus to Mr. A. G. BOND, B.A. Oxon., A.R.I.B.A., 115, Gower Street, London, W.C. (late Howgate and Bond).

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PRIVATE STREET WORKS ACT, 1892.

TO CONTRACTORS.

The Council hereby invite TENDERS for MAKING-UP the following STREET:—CHARGEABLE LANE.

Plans may be seen, and specification, form of tender, and further particulars obtained at the office of Mr. JOHN G. MORLEY, Borough Engineer, Town Hall, West Ham, E., upon payment of one pound, which will be returned upon receipt of a bona-fide Tender.

Tenders, endorsed "Tender for Private Street Works," to be sent to my office not later than FOUR o'clock on TUESDAY, 10th MAY, 1904.

The Council does not bind itself to accept the lowest or any Tender.

The Contractor will be required to enter into a bond with two sureties for the due performance of the contract, and no work will be ordered under the contract until such bond has been duly executed.

The contractor whose Tender is accepted, and with whom a Contract is entered into, will be required to pay to the whole of his workmen such rate of wages, and observe such hours of labour as are recognised by the Workmen's Trade Unions, and shall not assign, nor underlet, or make a sub-contract with any person or persons for the execution of any part of such work. In the event of any breach of such agreement the Council will enforce the penalty clause in its entirety.

By Order of the Council,

FRED E. HILLEARY.

Town Hall, West Ham, E.
April, 1904. Town Clerk.

GLOUCESTER EDUCATION COMMITTEE.

TO BUILDERS.

Builders desirous of TENDERING for the ERECTION of proposed NEW SCHOOLS in Carlton Road, Gloucester, are requested to send in their names to the architect, Mr. WALTER B. WOOD, 12, Queen Street, Gloucester, not later than APRIL 30th, 1904, at whose office the drawings and specification may be seen on and after SATURDAY, APRIL 23rd, 1904, between the hours of TEN and FIVE.

Bills of quantities will be supplied by Messrs. VALE & KINGSFORD, 21, George Street, Gloucester, on payment of £3, which sum will be returned to those contractors only who send in bona-fide Tenders.

Tenders to be sent in to the undersigned by or before TWELVE o'clock on SATURDAY, MAY 28th, 1904, sealed up and endorsed, "Tender for New Schools, Carlton Road, Gloucester."

The Committee do not bind themselves to accept the lowest or any Tender.

P. BARRETT COOKE,

Secretary to the Education Committee.
Berkeley Street, Gloucester.

TO ENGINEERS AND Others.

The Metropolitan Asylums Board invite TENDERS for ENGINEERING REVISIONS in LAUNDRY, and EXHAUST and CONDENSED STEAM, HOT-AIR, and RAIN-WATER UTILISATION, at Leavesden Asylum, near Watford, Herts, in accordance with drawings and specification prepared by Mr. W. T. HATCH, M.I.C.E., M.I.M.E., Engineer in Chief.

Drawings, specification, conditions of Contract, and form of Tender may be inspected at the Office of the Board, Embankment, London, E.C., on and after FRIDAY, APRIL 22nd, 1904, and can then be obtained upon payment of a deposit of £2. The amount of the deposit will be returned only to persons who have sent in bona-fide Tenders in accordance with the regulations.

Tenders, addressed as noted on the form, must be delivered at the Office of the Board not later than TEN a.m. on TUESDAY, 17th MAY, 1904.

By Order,

T. DUNCOMBE MANN,
Clerk to the Board.

18th April, 1904.

TO BUILDERS.

TENDERS required for the ERECTION of TWO PAIR of VILLAS at Orpington, Kent.

Plans, specifications, and forms of Tender, which are in course of preparation, may be had of Messrs. FITCH & Co., 43, Bedford Row, W.C.

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Write your advertisement clearly and send it to the Manager, Builders' Journal, Great New St., Fetter Lane, E.C.

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EMPLOYMENT REGISTER.

Too late for Classification.

- 345.—ARCHITECT'S ASSISTANT, experienced, wkg. and detail drawings, specifications, quantities, surveying and levelling, excellent refs.
- 346.—GENERAL FOREMAN, age 39, practical, energetic, carpenter and joiner, abstainer, good refs.
- 348.—ARCHITECT'S ASSISTANT, good genl. ex., can assist with wkg. and detail drawings, specification, and quantities, competition work, &c.
- 349.—GENERAL FOREMAN, bricklayer, good manager, good refs.
- 350.—ARCHITECT'S IMPROVER or JUNIOR ASSISTANT, age 19. Prob. R.I.B.A., London ex., excellent refs.
- 351.—ARCHITECT AND SURVEYOR'S ASSISTANT, ex. in Isolation Hospital work, wkg. and detail drawings, quantities, surveys, good refs., mod. s.
- 357.—GENERAL FOREMAN, age 27, abstainer, well up in W.D. and Admiralty Schedule, 4 yrs. charge of specials, measure and abstract.
- 358.—PLUMBER, gas and hot water fitter, 11 yrs. ex.
- 360.—STAINED GLASS ARTIST prepares competition designs in all styles. Thorough knowledge of prices.
- 361.—GENERAL FOREMAN, used to jobs at competitive prices.

See p. xxii for the Employment Register.

5 O'CLOCK P.M. MONDAY IS THE LATEST TIME FOR RECEIVING "WANT" ADVERTISEMENTS.
OFFICE: 6, GREAT NEW STREET, FETTER LANE, E.C.

Tenders.

Information from accredited sources should be sent to "The Editor" at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Aylesbury.—For the erection of additional offices at the county hall, Aylesbury, for the Bucks County Council. Mr. R. J. Thomas, M.I.C.E., county surveyor, County Hall, Aylesbury:—

W. H. Staley, Chinnor	£2,560
C. H. Hunt & Sons, High Wycombe ..	2,242
G. & T. Cannon, Aylesbury	2,224
D. Mayne & Son, Aylesbury	2,140
A. W. Nash, Dunstable	1,975
G. Tombs & Son, Buckingham	1,949
H. Flint, High Wycombe	1,927
Webster & Cannon,* Aylesbury	1,898

* Accepted.

Barnard Castle.—For alterations to stables, for Sanitary Steam Laundry. Mr. F. Farrow, architect, Barnard Castle. Quantities by architect:—

J. Kyle & Sons,* Barnard Castle.	
C. Martin, York.	
J. Lumley, Barnard Castle.	

* Accepted subject to amendment.

Beaconsfield.—For the erection of hotel and stabling at Beaconsfield Station, for Messrs. Weller. Mr. Arthur Vernon, architect, 9, Strand, Charing Cross, London, W.C., and High Wycombe, Bucks:—

J. K. Cooper & Sons	£3,097 0 0
G. Darlington	3,060 0 0
Webster & Cannon	2,888 0 0
Y. J. Lovell	2,845 0 0
F. G. Rust	2,832 14 0
C. H. Hunt & Son	2,593 0 0
J. Mead	2,583 0 0
H. Flint	2,493 0 0
G. H. Gibson	2,437 0 0

Blaenavon (Mon).—For the erection of a mixed school to accommodate 250 children, together with an infants' school adjoining for 150 children, in Upper Hill Street, Blaenavon, for the Blaenavon School Board. Mr. B. J. Francis, architect, Abergavenny:—

J. Bevan, Blaenavon	£7,990
J. Byard & Sons, Gloucester	7,740
J. Newcombe, Ebbw Vale	7,730
J. Charles, Newport, Mon	7,598
J. Edmunds, Blaenavon	7,565
J. G. Thomas & Sons Abergavenny ..	7,500
J. Morgan, Brynteg, Blaenavon	7,498
C. H. Reed, Newport, Mon.	6,770
C. Cooke,* Hereford	6,370
A. D. Burgoyne, Blaenavon, Mon. ..	5,924

* Accepted.

Bromyard.—For the erection of new shop and premises at Bromyard, for Mr. John James. Messrs. Groome

& Bettington, architects, Palace Chambers, Hereford. Quantities by the architects:—

W. James, Bromyard	£875
A. Newbold, Bromyard	875

Elgin, N.B.—Accepted for the erection of a drapery warehouse. Mr. R. B. Pratt, A.R.I.B.A., architect, Elgin:—

Mason—W. Jamieson. Carpenter—I. A. Robb, Rothes.	
Plumber—J. Gordon & Son. Slater—A. Davidson & Son. Plasterer—George Grey. Painter—W. Fordyce. Ironwork—I. Johnston & Son.	
Total £2,215. [Rest of Elgin.]	

Hereford.—For the erection of a residence at "The Barton," Hereford, for Mr. H. Evans. Messrs. Groome & Bettington, architects, Palace Chambers, Hereford. Quantities by the architects:—

R. L. Friend	£860 0 0
R. Taylor	790 0 0
Thomas Hiles	772 0 0
W. Bowers & Co.	748 5 0
W. Powell	746 8 6
Charles Cooke	712 0 0

[All of Hereford.]

Leominster.—For the erection of a pair of semi-detached villas at Leominster, for Mr. A. Gardner. Messrs. Groome & Bettington, architects, Palace Chambers, Hereford:—

Charles Cooke, Hereford	£1,365 0 0
J. Watkins, Leominster	1,325 5 0
J. H. Davies, Leominster	1,297 10 0
W. Powell,* Hereford	1,291 15 0

* Accepted provisionally.

Liverpool.—For proposed alterations and renovations to the Grand Theatre, Liverpool, for the Liverpool Mortgage Insurance Co. Ltd. Mr. J. H. Havelock Sutton, architect, 101, Dale Street, Liverpool. Quantities by the architect:—

J. Henshaw & Sons	£5,790
Brown & Backhouse	5,500
J. W. Weeks & Son	5,370
P. Tyson	5,210
J. & G. Chappell	5,210
J. Patterson & Son	5,123
Haugh & Pilling	5,100
F. W. Mayer & Co., Ltd.	5,055
J. Tomkinson & Co.	4,975
Holme & Green*	4,895

* Accepted.

Llandaff (Wales).—For the erection of a Presbyterian church in Hawthorn Road, Llandaff, for the Building Committee. Mr. D. Pugh-Jones, M.A., F.S.I., architect, Queen's Chambers, Queen Street, Cardiff:—

J. H. Thomas	£1,896 0 0
F. Thomas	1,805 0 0
W. G. James	1,795 10 0
E. Williams, Whitechurch	1,774 14 6
Jenkins & Harry, Radyr	1,756 15 6
S. Shail,* Station Road	1,675 0 0

[Rest of Llandaff.]

Nottingham.—For the erection of the Blue Bell Inn, Parliament Street, Nottingham, for Mr. George S. Green.

Mr. Hedley J. Price, A.R.I.B.A., architect, 24, Low Pavement, Nottingham. Quantities by Messrs. Pearson, Shaw & Son, Angel Row, Nottingham:—

Dennett & Ingle	£2,614 0 0
F. Messom	2,560 0 0
H. Vickers & Son	2,539 0 0
T. Long	2,535 3 0
E. Hind	2,486 0 0
H. Gilman	2,479 6 0
J. H. Vickers	2,475 0 0
J. Wright	2,466 0 0
J. Shaw	2,462 0 0
W. Maule	2,396 0 0
W. Crane, Ltd.	2,354 17 0
R. Fisher	2,320 0 0
T. H. Harper	2,320 0 0
J. J. Adams	2,305 0 0
G. Pillatt*	2,303 0 0
J. G. Short	2,253 0 0

* Accepted.

Sheffield.—For the erection of a crematorium as an annexe to the chapel on the general side of City Road Cemetery, for the Burial Grounds Sub-Committee. Mr. Charles M. Hadfield, architect, Calms Chambers, St. James's Street, Sheffield:—

J. Dyson	£3,280 0 0
J. Walker & Son, Wirksworth, Derby	3,270 0 0
W. & A. Forsdike	3,150 0 0
J. Wright, Chesterfield	3,078 3 8
Vasey & Son	3,000 0 0
Sheffield Corporation Works Dept. ..	2,990 0 0
J. Eshelby	2,975 0 0
Ash, Son & Biggin, Furnival Street ..	2,740 0 0
W. Nicholson & Son, Leeds	2,674 0 0
D. O'Neill & Son,* Bower Road	2,480 0 0
Wilson & Kennington	2,397 0 0

* Accepted. [Rest of Sheffield.]

Springwell (near Gateshead).—For the erection of schools, with out-offices, for the Ushwcrth School Board. Mr. Stephen Wilkinson, architect, 30, Mosley Street, Newcastle-on-Tyne:—

J. Parkinson & Son, Ltd.	£4,370 12 2
Davison & Bolam	4,189 19 8
H. C. Howe	3,921 4 7
D. Chambers	3,917 7 6
Thompson & Son	3,806 11 2
W. Hall	3,733 12 2
J. Ross	3,695 10 1
H. S. Douglas	3,664 7 5
J. MacElhattan	3,603 9 9
W. Foster	3,550 0 0
W. C. Tyrie	3,458 5 0
T. Hunter	3,455 0 0
I. Burnett & Son	3,442 12 0
C. Groves	3,400 13 0
T. Soulsby	3,378 0 0
J. Robinson	3,343 13 4
D. Bruer,* New Washington	3,178 18 5

* Accepted.

(Continued on p. xx.)

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TENDERS—cont. from p. xviii.

West Heath (near Birmingham).—For construction of a diphtheria pavilion (containing 20 beds) and an observation pavilion (containing 12 beds) at the infectious diseases hospital, West Heath, a distance of 1½ miles from Northfield Station (Midland Railway), also for providing and fixing a 6-h.p. vertical boiler, steam-piping, shafting and pulleys, wall brackets and striking gear to machinery in laundry, for the King's Norton and Northfield Urban District Council. Mr. Ambrose W. Cross, A.M.I.C.E. engineer, 23, Valentine Road, King's Heath:—

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E. Hadley & Sons, Claremont Works, Old Hill	4,872
J. Dallan & Sons, Blackheath	4,800
R. Fenwick, Ltd., William Edward Street	4,755
C. Pegram, Bristol Road, Northfield ..	4,678
Gowing & Ingram, Belgrave Road ..	4,671
G. Giles & Son, Bordesley Green ..	4,660
T. Land & Sons, Bournbrook	4,657
W. H. Gibbs, King's Heath	4,600
W. Bishop, King's Heath	4,463
H. Dorset, King Street, Cradley Heath, Staffs. ..	4,358
T. Johnson, * Great Brook Street ..	4,289

* Accepted.

Current Market Prices.

	£ s. d.	£ s. d.
FORAGE.		
Beans per qr.	1 14 0	2 0 0
Clover, best per load	4 0 0	4 7 6
Hay, good do.	3 12 6	4 0 0
Sainfoin mixture do.	3 12 6	4 2 6
Straw do.	1 10 0	2 0 0

OILS AND PAINTS.

Castor Oil, French per cwt.	1 0 5	—
Colza Oil, English do.	1 1 6	—
Copperas per ton	2 0 0	—
Lard Oil per cwt.	2 15 0	2 17 0
Lead, white, ground, carbonate do.	1 4 10	—
Do. red do.	1 0 4½	—
Linseed Oil, barrels do.	0 14 10½	—
Petroleum, American per gal.	0 0 6½	0 0 6½
Do. Russian do.	0 0 5½	0 0 6½

Pitch per barrel	0 8 0	—
Shellac, orange per cwt.	11 4 0	—
Soda, crystals per ton	3 2 6	3 5 0
Tallow, Town per cwt.	1 5 0	1 5 0
Tar, Stockholm per barrel	1 2 0	—
Turpentine per cwt.	2 2 6	—

METALS.

Copper, sheet, strong per ton	74 0 0	—
Iron, Staffs., bar. do.	5 15 0	8 10 0
Do. Galvanised Corrugated sheet do.	10 5 0	10 10 0
Lead, pig, Soft Foreign do.	12 5 0	12 6 3
Do. do. English common brands do.	12 12 6	—
Do. sheet English 3lb. per sq. ft. and upwards do.	14 0 0	—
Do. pipe do.	15 0 0	—
Nails, cut clasp, 3in. to 6in. do.	9 5 0	—
Do. floor brads do.	9 0 0	—
Steel, Staffs., Girders and Angles do.	5 10 0	6 5 0
Do. do. Mild bars do.	6 0 0	6 5 0
Tin, Foreign do.	127 10 0	128 0 0
Do. English Ingots do.	129 0 0	130 10 0
Zinc, sheets, Silesian do.	24 10 0	—
Do. do. Viole Montaigne do.	24 10 0	—
Do. Spelter do.	22 2 6	22 12 6

TIMBER.**Soft Woods.**

Fir, Dantzic and Memel per load	1 13 0	3 0 0
Pine, Quebec, Yellow do.	5 5 0	6 5 0
Do. Pitch do.	2 5 0	3 0 0
Laths, log, Dantzic per fath.	4 10 0	5 10 0
Do. Norrköping per bundle	0 0 7½	—
Deals, Archangel, White, 1st, 3x9 per std.	12 0 0	—
Do. do. Yellow, 3rd, 3x9 do.	12 0 0	—
Do. do. Yellow, 5 to 12ft. do.	8 5 0	8 10 0
Do. Ljusne, Yellow, 3rd, 3x9 do.	16 10 0	—
Do. do. do. 4th, 4x11 do.	12 10 0	—
Do. do. do. 4th, 4x9 do.	12 10 0	—
Do. Soroka, Yellow, 2nd, 3x9 do.	14 15 0	—
Do. Bure & Nordmalings, Yellow, 2nd, 3x7 do.	9 5 0	—

Deals, St. Petersburg, Yell., 1st, 3x11 per std.	14 0 0	—
Do. do. do. 3x9 do.	11 10 0	—
Do. do. do. 3rd, 3x7 do.	8 5 0	—
Do. Quebec, Yellow Pine, 1st, 3x11x12ft. do.	21 10 0	22 5 0
Do. do. do. 3x11x13ft. do.	22 15 0	23 9 0
Do. do. do. 3x11x14ft. do.	23 10 0	—
Do. do. do. 3x11x15ft. do.	26 0 0	—
Do. do. do. 3x11x16ft. do.	26 0 0	—
Do. Quebec Spruce, 2nd, 3x11x12ft. do.	8 15 0	9 0 0
Do. do. do. 3rd, 3x11x12ft. do.	8 0 0	—
Do. Montreal Spruce, 2nd, 3x11x12ft. do.	9 0 0	—
Do. do. do. 3rd, 3x11x12ft. do.	8 0 0	—
Do. do. do. 3rd, 3x11x13ft. do.	8 0 0	—
Battens, all kinds do.	6 5 0	12 5 0
Scantlings do.	6 10 0	9 15 0
Flooring Boards 1in. prepared, 1st per square	0 8 9	0 12 6
Do. 2nd do.	0 8 3	0 9 9
Do. 3rd, &c. do.	0 7 0	0 10 6

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Ash, Quebec per load	3 12 6	—
Birch, Miramichi, Planks, 3x5 to 16in. per cu. ft.	0 0 11½	—
Box, Turkey per ton	15 0 0	20 0 0
Cedar, Cuba per ft. sup.	0 0 3½	—
Do. Honduras do.	0 0 4	—
Do. Tobasco do.	0 0 5½	—
Elm, Quebec per load	4 2 6	—
Mahogany, Average Price for Cargo, Honduras per ft. sup.	0 0 5½	—
Do. African do.	0 0 3½	—
Do. St. Domingo do.	0 0 3½	—
Do. Cuba do.	0 0 4	—
Do. Lagos do.	0 0 3½	—
Do. Benin do.	0 0 3½	—
Do. Tobasco do.	0 0 5½	—
Oak, Liban, Crown Wainscot logs per load	2 15 0	—
Do. Flume round logs do.	3 7 0	—
Do. Quebec do.	4 10 0	—
Teak, Rangoon, planks do.	8 0 0	15 10 0
Do. do. logs do.	11 5 9	—
Do. Indian planks do.	12 5 5	—
Do. Moulmein logs do.	6 10 0	8 0 0

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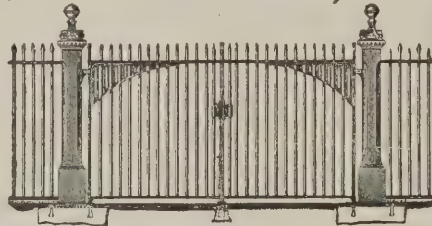
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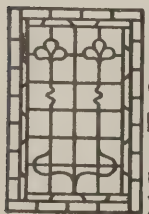
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THE BUILDERS' JOURNAL

AND ARCHITECTURAL RECORD.

May 4, 1904. Vol. 19, No. 482.

6, Great New Street, Fetter Lane, E.C.

Summary.

The great work of art at the Academy this year is Mr. Watts's statue of "Physical Energy," in the quadrangle. The architectural room shows good average merit, though there is nothing outstanding. Mr. Aston Webb shows a drawing of the Victoria Memorial scheme, Mr. Carøe the University of South Wales and Monmouthshire at Cardiff—the plan of which is far finer than the elevations—Mr. Gibbs an admirable design for extensions to the Mappin Art Gallery at Sheffield. Mr. Bodley, Mr. Ernest George, Mr. Champneys, Mr. Leonard Stokes, Mr. H. Percy Adams and most of the other well-known men are represented. Classic is in full favour. (Page 208.)

The British Fire Prevention Committee are preparing tables embodying the results of about eighty tests conducted by them during the past five years. A branch in Canada is to be formed. The Committee have issued an authoritative and illustrated account of the fire at the Iroquois Theatre, Chicago, and they point out that the statements made about the Toronto fire are very misleading and exaggerated, there having been no "fire-proof" buildings on the destroyed area. (Page 218.)

The master-builders of Dublin have been protesting against the Irish Board of Works giving contracts to English and Scotch firms without competition or public announcement. (Page 213.)

A plan of the first garden city proposed to be built near Letchworth, in Hertfordshire, has been issued. The total area shown as likely to be developed is, approximately, 1,200 acres. Provision is made for a population of 30,000 persons, or about 35,000 inclusive of the villages outside the town and the population engaged in agricultural pursuits. (Page 217.)

The design of Messrs. Dodd & Dodd, of Birmingham, has been accepted for the proposed new bridge at Aylesford. (Page 218.)

A disagreement has arisen about the new Gaiety Theatre and Hotel. The company wants £25,000 more from the L.C.C. in respect of the embellishment of the structure. The L.C.C. object. Mr. Norman Shaw is to settle the matter. (Page 218.)

A thorough policy of attention to the "most beautiful and priceless collection of ancient monuments in the eastern world" is being pursued by the Government of India. £37,000 a year is now devoted to this work. (Page 214.)

Returns show the splendid housing results obtained by the Improved Industrial Dwellings Company as compared with the London County Council and the Peabody Trust. (Page 218.)

The new infantry barracks at Mill Hill, accommodating between 2,000 and 3,000 men, are now almost complete. (Page 218.)

Architects' Registration. CERTAIN of our remarks about the Members of the R.I.B.A. for Promoting the Statutory Qualification of Architects seem, unfortunately, to have been misunderstood, and it may be well therefore to correct a mistaken impression which may exist in some persons' minds. What we objected to was the issue of such a circular as that sent out by a private committee of Institute members—virtually a pro-registration committee—when the official committee appointed by the Council still had the matter under careful consideration. This latter committee, including, as we believe it does, most of the presidents of the allied societies, can be trusted to go into the pros and cons of registration in a fair manner, and to give full consideration to both sides of this very intricate problem. So that the "London Committee" had no good ground for its action. But, at the same time, while we are strongly of this opinion, and consequently not in approval with the action of the "London Committee," we have no personal grievance against the members who compose it. Many of these are architects of ability, and as such, we fully recognize their position: yet we cannot but feel that theirs was a *faux pas*, in which belief we are not alone, as the resignation of three members of the Executive clearly proved.

Wages in America. FROM an American source we get some particulars of wages now current in the New York building trade, and it is interesting to compare them with a table which we published in our issue for September 30th last. By the latter we see that in this country, masons, carpenters and joiners receive practically the same wage, while painters are paid considerably less and plasterers considerably more. This tallies with the report from New York now to hand. There the plasterer receives 68½ cents (nearly 3s.) an hour, or at the rate of 5½ dollars for an eight-hour day: but our contemporary the "American Architect" observes that anyone who has had a bit of live lime in the eye, or has considered the muscular strain involved in trowelling a ceiling all day long, "will readily admit that there is reason and justice in this high rate." It appears, however, that the electrician is only paid half a dollar (say 2s.) an hour, the same rate as the painter, though he has to be a skilful workman possessing considerable experience, and he may very easily endanger the safety of the building he is wiring, while painting is chiefly manual work easily learnt and not requiring much intelligence, if one may judge by the average stock of painters. House-shorers in New

York, who also have to undertake demolitions, are paid 34½ cents (less than 1s. 6d.) an hour, whereas labourers get from 25 to 45 cents (1s. to 1s. 10d.). On the face of it these differences seem strange, but the reason is not far to seek. "The rate of wages evidences the strength and combativeness of the several labour unions, and we fancy that if the structural ironworkers had won their strike last year, their wage-rate now would be more than 56 cents per hour, which is 6½ cents less per hour than is paid to marble-setters, one of whose favourite antics is to cause finished marble already in place to be torn out, so that it may be repolished by good union labour." The Americans evidently know the possibilities of trade unions as well as we do.

A Forthcoming Competition. MR. PERKS's announcement about the Wesleyan Church House which is to be built on the site of the Westminster Aquarium has special interest for architects, for in a few weeks' time preliminary sketches or designs are to be invited with a view to a subsequent limited competition. Mr. Aston Webb, we notice, is to be the assessor. The buildings are to be of a monumental character and to cost £120,000, but perhaps the most notable part of the announcement is that no Gothic designs will be considered. Evidently the trustees recall what took place at Liverpool, but the chief reason for the boycott is stated to be "that Gothic architecture would not suit the requirements of the Methodist Church from an acoustic point of view." We are not sorry that this restriction has been imposed, for it will lead to more interesting results. The familiar Gothic of the church architects is likely to be replaced by a modern classic design, and provided this shows ability and life we shall welcome the change; possibly the town hall architects will have a fling, though they must beware of "a free treatment" next door to the Abbey! Mr. Perks stated that the premises will contain a large hall of amphitheatral shape, seating 2,500, the galleries having fixed seats, though on the ground floor the seats will be movable so that the auditorium may be entirely cleared. In the basement will be rooms for tea-meetings, &c., seating 1,000 persons. A small hall for 500, and a lecture-hall or library for 500, with a reception-room, four large committee-rooms, and twenty spacious offices will complete the public portions of the building. A large reading- and writing-room, a residential flat for the librarian or secretary, and caretaker's rooms, cloak-rooms, &c., are included in the scheme, which is thus seen to be a very extensive one.

THE ROYAL ACADEMY EXHIBITION.

IF the Academy contained one great work of art every year we might then consider ourselves the most artistic nation in Europe. The work of an artist of supreme genius should cause posterity to look upon the twentieth century as not backward in the race so far as art is concerned. In this year's Academy there is one very notable work of art, which is, of course, the colossal bronze statue of "Physical Energy" standing in the courtyard of Burlington House by G. F. Watts, our greatest living painter. It impresses the beholder with a sense of majesty and power that makes everything else seem puny. On a rough hewn pedestal the horse stands vibrant with energy, restrained by the nude and muscular rider whose eyes seem to be peering into the future from under his raised hand. There is a grandeur of line and massing visible from every point of view. The only thing that seems to compare with this truly sculptural statue is Rodin's "Le Penseur," shown at the International Exhibition this year, by a happy coincidence. The age is fortunate indeed in the possession of such men. At the Academy there is nothing that can rank with Mr. Watts's creation. And it is peculiar that after so long a neglect sculpture should be now the most important and truly virile part of British art work. Mr. Alfred Gilbert, the great sculptor, is represented only by a head (No. 1714), though a remarkable one, entitled "The Mother of the Ninth Symphony," a study for a contemplated monumental homage to Beethoven. But we must leave this part of the exhibition, although it approaches most closely to architects in its interest, sculpture being subjected to the same conditions and employing many of the same means as architecture, with which it is so often in intimate association. We mention in passing a very successful bronze and marble group by Mr. F. Lynn Jenkins entitled "The Spirit of British Maritime Commerce" (1834)—part of the decorative scheme for the staircase of Lloyd's Registry. Mr. W. Goscombe John, A.R.A., submits a sketch model (1840) of a monument to commemorate the King's Liverpool Regiment to be erected in Liverpool, but, though skilful in execution, it is not imaginative enough in conception.

Mr. Alfred Drury, A.R.A., submits an architectural subject in the shape of a bronze decorative keystone to the new building for the Royal London Friendly Society (1668). This only emphasizes the need of the strong restraining hand of the architect, for the keystone is not at all constructive in feeling. In the desire to gain emphasis and to call attention, the proper relation of the arch would be destroyed by it.

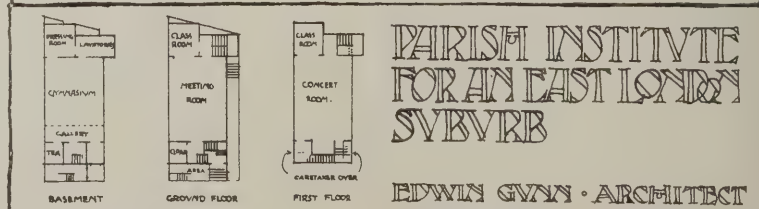
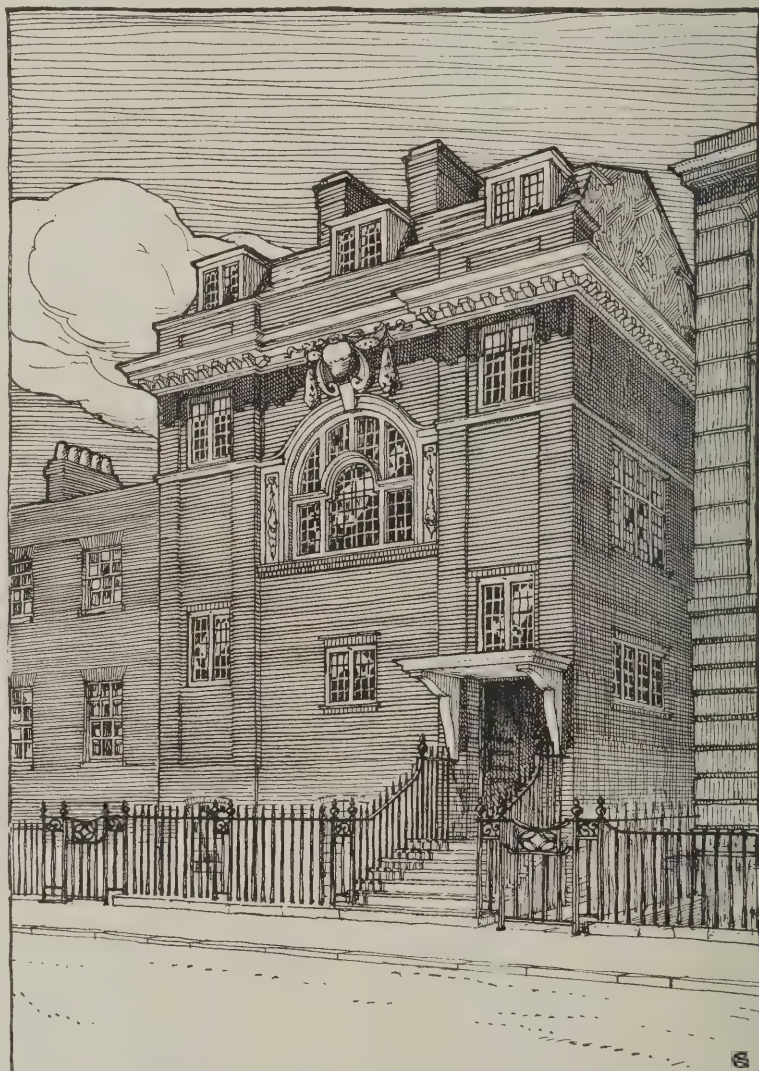
As regards the Architectural Room, though the average of merit is high, there is no work of outstanding merit. Of course architects have not the same freedom that other artists enjoy, namely, in so far that the subjects are seldom of their own choosing and, except in their own speculative work, are always restricted by clients' needs; thus being generally hampered. It is only when a free hand is given, such as Cardinal Vaughan gave to Bentley with the new Westminster Cathedral, that it is possible for an architect to rise to such heights as the sculptor or painter. He can of course let his imagination play in projects of monumental buildings, and though occasionally seen it would be better if this were cultivated more in the training of students. It is just in this respect that the architectural room at the Academy is wanting this year: for the quality of imagination or originality is grievously absent. Only in a few of the exhibits does it show itself, and then the opportunities are not sufficient to bring

about any striking results. It is regrettable that the greatest competitive opportunity there has been of recent years, the design for the Queen Victoria Memorial, has not been productive of a great design. Mr. Aston Webb has done well admittedly, and his diploma work, No. 1498, deposited on his election as an Academician, must make everyone regret that his original design has been so sheared of most of its pretensions to monumental effect through the want of money. But we must admit that, able as the design is, and better though it is than the others submitted, it lacks imagination, it is yet spiritless and small in grasp. The exhibit shows the plan and a fine drawing by Mr. Raffles Davison of the view looking towards Buckingham Palace. We admit the discouraging factors that exist against which the man of genius always has had to struggle, and the failure of the architects of to-day is generally honourable, but still the

fact remains that we have few works of genius. All the other considerable opportunities called to mind by exhibits this year have been productive of failure.

The only design for Liverpool Cathedral shown is Mr. W. J. Tapper, a splendid water-colour drawing of the interior (No. 1600). The lighting is very fine and the solution of a difficult problem is good, but the medium of archaeological Gothic is the wrong one. The interior has rather too spacious and wide a look about it in the drawing.

The design (No. 1448) by Mr. Edward M. Gibbs for the extension of the Sheffield Public Museum and Mappin Gallery successfully overcomes a difficult problem. He has followed on the lines of the severe Classic of the Mappin Gallery by throwing out pilastered quadrant wings with square pavilions at each end, that on the left incorporating the old museum which was an annexe to the Mappin Gallery, and that on the right



The accommodation desired in this building was as follows:—Gymnasium with dressing-room and lavatories in basement; room for meetings with classroom in connection on ground floor; concert hall, also with classroom, above; and caretaker's quarters. The gymnasium is separately approached by stairs in the front area, and a small public gallery is provided, access being gained by a short flight of stairs from the main entrance. A tea-making place is provided, with service lift to all floors. Two entrances are arranged to the meeting-room and hall, each of the classrooms being entered direct from the landings and so devised that it would be possible to throw them open to the larger rooms if needed. The building being next a public street, the important rooms are all kept back from the main front with the idea of lessening noise. Also with this object the large window at the back of the stage opens into the passage to caretaker's rooms with a borrowed light to concert-room. The materials proposed were red sand-faced bricks, wooden cornice, plaster panels and enrichments around central window, and green Westmoreland slates on the roof. The drawing is in this year's Academy.

being only a small gallery by reason of the smallness of the site, and serving to secure symmetry. The way in which this design is modelled to the awkward triangular site is excellent, and the resulting scenic effect is monumental and restful with its one-floor height and long low lines. We suggest that the little shield ornaments shown in the perspective should be omitted in execution, for they import a vertical feeling which is not needed directly over the semi-circular columned porticoes which relieve the fronts of the pavilions.

Perhaps the third most important exhibit is the University of South Wales and Monmouthshire, at Cardiff. The accepted design by Mr. W. D. Caröe is represented by two frames, No. 1563 being a bird's-eye view and 1564 the principal entrance. The plan has possibilities, though it is not shown, for the Academy does not encourage plans, nor elevations for that matter, and the only way they are possible is on a small scale at the corner of a perspective. The elevational treatment is, however, not worthy of the plan; the detail generally is wanting in the simplicity and repose of proportion that distinguish a real work of art. Mr. Caröe is however deserving of commendation for his honest endeavour to produce a result worthy of the opportunity, and he has not altogether failed. The design by Mr. John Belcher, A.R.A., Nos. 1616 and 1625, is only shown in elevation, but so far as we can judge was dignified and would have looked much finer than the accepted design.

Mr. Caröe has another large and important building on hand which is represented here (No. 1450)—the new premises for the Ecclesiastical Commissioners at Westminster, now in course of erection. It is quite unworthy to be in juxtaposition to the Houses of Parliament and Westminster Abbey. It looks just like the usual type of West End block of flats. It has size, but no dignity; overloaded with ornament, but with no proportion; it shows no strength and is a total failure at the grasp of a big problem. Considering the agitation over the pulling down of the houses on its site in Great College Street, &c., we expected to get something better; we have however only satisfaction to express for the design (No. 1437) by Mr. Horace Field for new offices for the North-Eastern Railway Company in Cowley Street, Westminster, which is a simple reserved red-brick building of the old Wren house type, with a triangular pediment in the centre of the front. It is quite the appropriate treatment to its surroundings, and entirely overcomes our regret at the destruction of the fine old houses it replaces. It shows great moderation, and we only hope that Mr. Field may have to deal with any other sites in this locality which the Ecclesiastical Commissioners see fit to dispose of.

The most important branch of architectural work is public buildings, in which, though no distinct style is in vogue, we think we see glimmerings of a distinct type, the severe English Classic, and the signs are hopeful of as distinct a national style being resurrected as has taken place in domestic work, which is, however, poorly represented this year. We must leave these branches for the moment to glance at the few buildings which really betray any imaginative faculty in their authors, for in them lies our chief hope for the next decade.

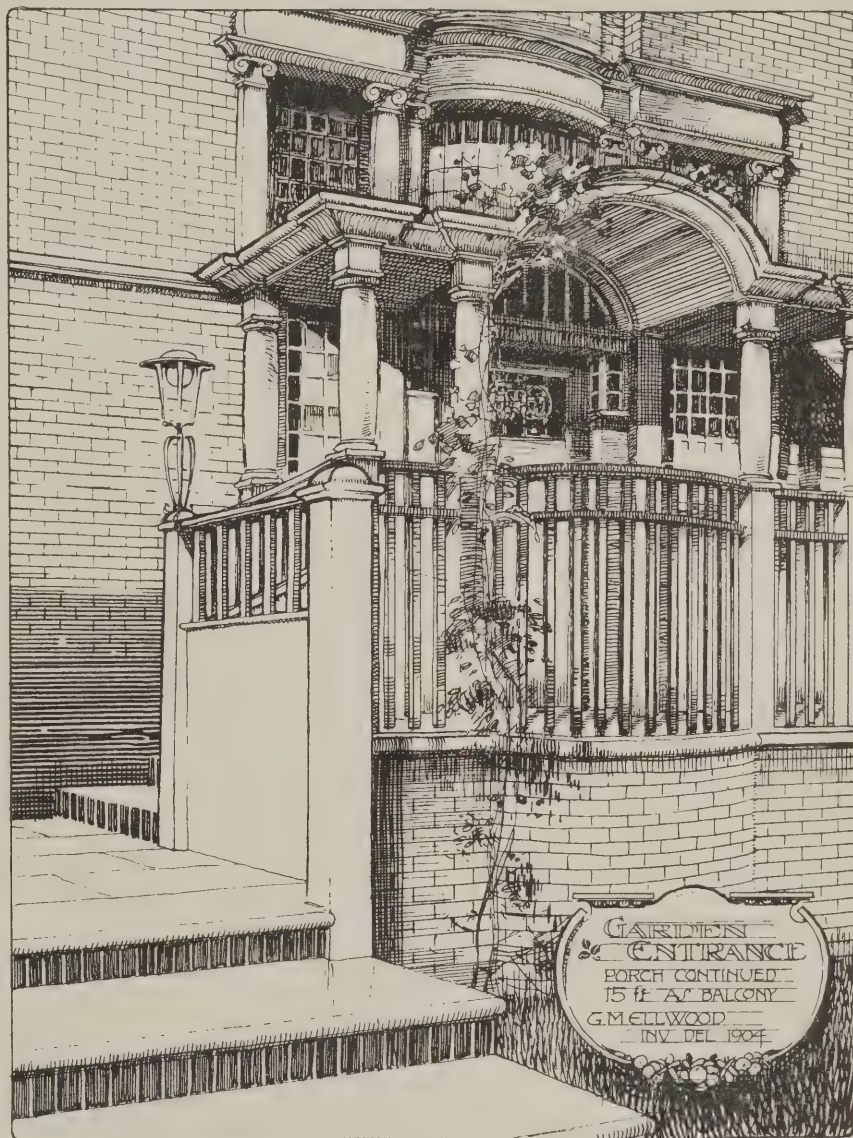
Mr. Howard Ince contributes one little frame (No. 1475) of a small building only proposed, but it contains probably more real merit than any other in the room. It is a section showing the interior of a mausoleum to contain cinerary urns and shows a domed building treated with marble and mosaic. It is very solemn and death-like in its stillness, and every detail plays its part in giving a masterly feeling of reverence. We only wish it could be carried out. Two beautiful

water-colour drawings are contributed by Messrs. Baker, Masey & Sloper for buildings at Johannesburg, and they sustain the reputation already achieved by Mr. Baker. The distinguishing feature in both is the local feeling: they are not exotic in growth, but have the very atmosphere of South Africa. The more important is a design for a railway station (1474), which is a huge stone building with massive base (with glass shelter) rising up plain until the top is reached, where there is an arcade of coupled columns and arches of Etruscan Doric form, reminding powerfully of the Roman Coliseum affording plenty of cool shade from the tropical sun. There is a big arched entrance in front and the plain facade is just relieved by projecting

mixture of the French and Scotch chateaux in style, yet is quite personal.

Mr. John H. Eastwood sends three frames which are all hung, two of work in his new Cathedral of St. Anne, Leeds: No. 1520 shows the Altar of the Sacred Heart, and No. 1646 the Shrine of St. Urban intended to hold his relics removed from Rome and to be executed in oak richly gilded. These are distinctly Gothic in flavour, but quite original. His other frame (1611) shows a proposed higher altar for the Cathedral of St. Barnabas, Nottingham.

That original Scotch architect, Mr. John James Burnet, A.R.S.A., submits in No. 1582 a highly coloured drawing of a new organ and chancel in King's Weigh-House Church,



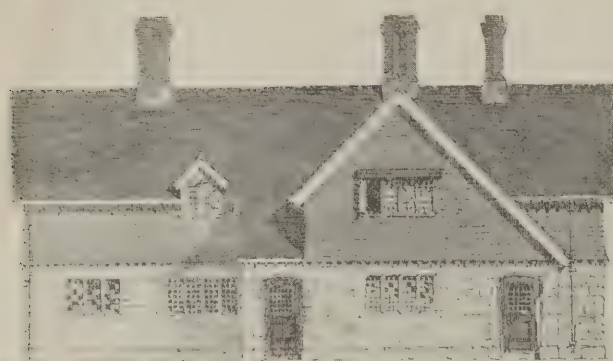
This porch is executed in oak, painted white with the exception of hand-railing, which is left natural and treated with Solignum. The porch and balcony are paved with green unglazed tiles edged with white marble, the landing and two steps down to the garden being of white marble with risers faced with green glazed (Dutch) tiles. The windows are of leaded Norman slabs, and the door panel of leaded glass, metals and beach pebbles. The architrave is broken on each side with a lantern of orange opalescent glass to contain an electric light. The electric-light standard on newel is in black iron. The drawing is exhibited at this year's Academy.

balustraded windows. No. 1473, a bank, is the other, and has a simple strong stone base with splayed corner on which is a balustraded oriel window. A range of engaged columns along the top and flat pilasters in the storey above the heavy cornice give a rhythm and beauty that is very fine.

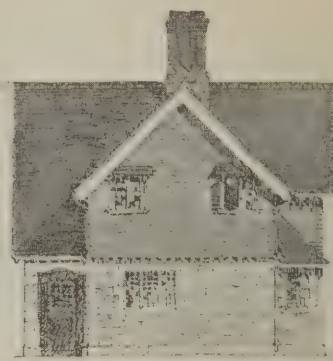
Mr. William Flockhart contributes two frames of very beautiful and powerful drawings by himself of Rosehaugh, Ross-shire, N.B., one (1489) of the exterior and the other (1504) of a William and Mary bedroom, a Jacobean bedroom and a chimney-piece. This building is a peculiar

Grosvenor Square, London, which is a remarkably fine treatment of the end of this peculiar oval interior—a difficult problem. The organ front is very fine, and the chancel end, intended to be decorated with a painting, is characteristically strong.

Prof. Beresford Pite, that original designer, shows but a small building wherein he is hampered for money, but nevertheless exhibits a distinctly personal treatment gained by purely constructive means. Mr. Pite's resource in construction leads him to many original and peculiarly beautiful results, unappreciated we are afraid by the public and the majority of architects. This design,



ELEVATION TOWARDS ROAD.

FIRST FLOOR PLAN.
GROUND PLAN.

ELEVATION TOWARDS QUARRY.

GUNTERSTONE COTTAGES, SELSFIELD QUARRY, SELSFIELD, SUSSEX. GEORGE O. SCORER, ARCHITECT.

These cottages are to be built of stone, with the upper storey tile-hung; old tile roofs, brick and stone chimneys. The stone to be used is chiefly from the wing of an Elizabethan house in the locality, pulled down a few years ago; the stone came from Selsfield quarry, and the same will be used for these cottages. The drawing is hung in this year's Academy.

No. 1655, is of a church for Entebbe, Uganda, which is of the simple hall type without projecting transept, though it has a crossing formed by the roof treatment. It is divided into aisles and nave and has a garden enclosure at the west end with a covered way consisting of lean-to roofs supported on plain pillars. The east end is semicircular. For economy the church has been kept quite plain, but a feature has been made by running up exposed brick piers, the curtain walls between being white plastered.

Mr. Arthur H. Ryan-Tenison's additions to Radley College, Berkshire (1559), are original and altogether successful in imparting the right feeling in a new way. We shall publish the drawing in two or three weeks' time.

Mr. R. Weir Schultz may generally be trusted to afford something original. In 1528 he shows a little country church, that of St. Michael's and All Angels, Woolmer Green, Welwyn, Herts. The east end is peculiar, having a kind of bay-window projection which is carried up the whole extent of the gable end of the nave roof, thus causing a peculiar roof plan. The tower is finely proportioned, but we do not like the projecting gargoyles formed of common iron pipe. Stone would have been better. No. 1622, his other exhibit, is a fine crayon drawing of a very pleasing little house near Edenbridge, Kent. The plan is novel, with wings at each end splayed away from the main block of the house. Coming to houses showing originality reminds us that Mr. C. F. A. Voysey is the creator of a new style of which it may be said that where he succeeds the copyists generally fail. For the nonce he has forsaken his characteristic white house and presented us with a very pleasing treatment in red brick and tiles—a proposed house at Hampstead (No. 1645)—and as our readers will have an opportunity of seeing a reproduction of this shortly, we need offer no further comment. Mr. Ernest Newton, who is always distinguished in his country-house design, never striving after quaintness and novelty for the mere sake of eccentricity, is represented by two domestic designs near each other: No. 1586, a lodge and cottages at Overbury, Worcester, and No. 1588, a house at Bickley, Kent. The first is in stone and the second, shown by a fine line drawing by Mr. Winton Newman, is in brick. They sustain the reputation of this architect.

Mr. C. R. Ashbee contributes two drawings, which we shall illustrate, of No. 75, Cheyne Walk, Chelsea—an exterior (1470) and interior (1444) which are quite characteristic. Mr. M. H. Baillie Scott is affected in his House in Russia (1458). Mr. E. Guy Dawber has three beautiful drawings of successful houses: No. 1483, Bibsworth, Worcestershire; No. 1484, Coldcote, Worcestershire; and No. 1486, Park Down,

Surrey (the entrance front only), which last we illustrate this week.

Mr. Herbert F. T. Cooper's "House for a Painter" (1511) is original and charmingly suggestive in its plan. Mr. H. Percy Adams sends the very fine water-colour drawing by Mr. T. H. Crawford of the King's Sanatorium (No. 1519) illustrated in our issue for November 25th, 1903; another fine drawing (No. 1523) of the Medical Superintendent's House, and a line perspective of the Law Society's new hall—in Chancery Lane, London—all remarkably good. Mr. Edgar Wood, another architect of great originality, shows a most peculiar Church for the Christian Scientists at Victoria Park, Manchester (1593), and Wesleyan Church and Schools, Middleton, Lancs (1595), both of which we shall publish. Cliff Towers, Devon, by Mr. C. Harrison Townsend (1612), is a very fine water-colour drawing. Burton Hall, Chester, by Messrs. Nicholson & Corlette (1639), is an impressive composition and another fine drawing, which we have in hand for publication.

Taking our next class, the public building, in order round the room, we come to 1431, St. John's Hospital, Leicester Square, London, another instance of the characteristic vertical treatment for a London street frontage. It is captivating at first sight, but there is no special reason for most of its detail and the curly unconstructive arch over the door supported on corbels. This is an exception to the usual type of public building which we referred to as likely to produce a distinct style. In 1436, the Passmore Edwards Public Library, Bow, by Mr. S. B. Russell, we are getting to this type of latter-day Classic. It has the usual neat heavy cornice, but to be eccentric has one foolish senseless little outward wobble. A circular turret with a high and heavy flag-post terminal, which we have seen so often, is included for no special purpose. The plain stone base with small round windows has a strong effect it is true, but it is doubtful whether sufficient light is given to the interior. The little pieces of stonework suggestive of the blocked column round the windows have an absurd appearance, and why must a shield be always placed on a rounded corner?

No. 1438, a design for a town hall for a London borough, shows that the R.I.B.A. or Academy students are leaning towards this Classic treatment we speak of, and, though a distinct improvement in the right direction, is totally unimaginative. It is the kind of safe thing.

In 1439, Public Offices, Hendon, by Mr. T. H. Watson, we have another exception to the usual thing. It is half an Elizabethan stone house with oriels supported from engaged columns and half public offices of the Mountford type. It looks for all the world as though the stone central building had been planned first for the offices and then

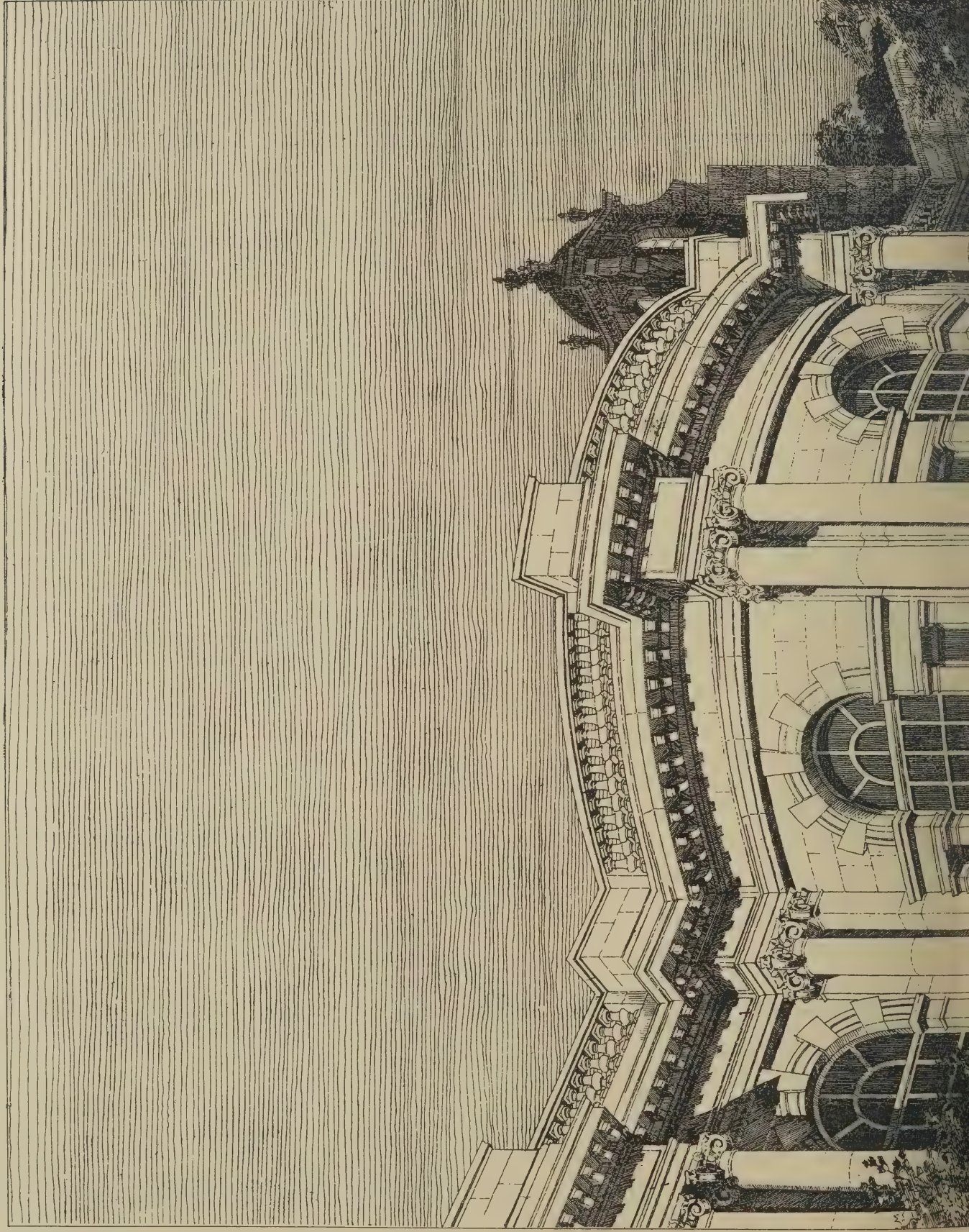
more accommodation had been added by red brick wings. No. 1449, Mr. John Murray's competition design for Hull Town Hall, is the usual Classic, suggestive of modern French work.

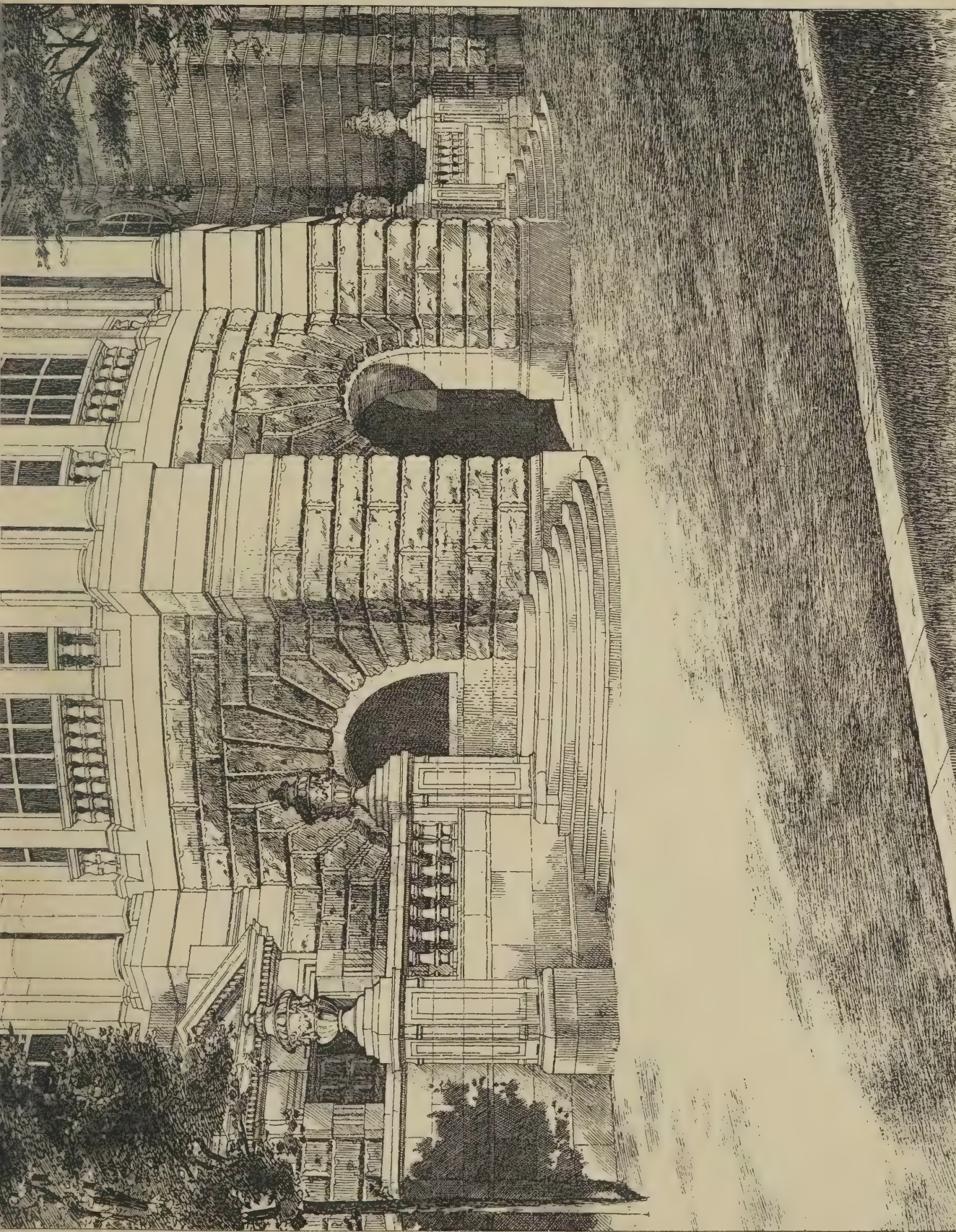
No. 1459, the New Flower Market, Covent Garden, by Lander, Bedells & Crompton, is severely Classic again and distinctly a success. The public offices, Camberwell (No. 1460), by Mr. Edwin T. Hall, are rather a medley of features we have known before in this architect's work.

No. 1464, a design for a town hall in a county town by Mr. A. A. Carder, was submitted in the recent Architectural Association competition and is a very happy composition. It shows the best product of A.A. training. Mr. H. R. Gardner's competition design for the Hull School of Art (No. 1481) is good. Mr. J. Hatchard Smith's design for Hull Town Hall (No. 1492) is the usual Classic type with a tower that does not come into the Neo-Greek feeling of the end. Messrs. Hawke and North's Rugby Urban District Council Offices (No. 1500) is a stone building of a Classic type more suited to Oxford; it is not good. Mr. Edwin Gunn's design for a Parish Institute (No. 1503) is a happy composition and is illustrated on p. 208 of this issue. No. 1508, a design for Hull Town Hall by Messrs. Jemmett & McCombie, is good but rather rambling. Mr. William F. Harber's design for Cape Town University is domed and more fitted to Constantinople than S. Africa. Mr. A. R. Mayston's new Town Hall and Fire Station at Sutton Coldfield (No. 1522) is nice, but the tower does not group very well with the rest of the composition. Messrs. Hawke & McKinlay's accepted design for the University of the Cape of Good Hope (No. 1533) has a distinct feeling of a sunny clime. The drawing was reproduced on p. 219 of our issue for May 27th, 1903. Mr. George Sedger's competition design (No. 1540) for the Central Library, Hammersmith, is pleasant. Mr. Henry T. Hare's Central Library, Hammersmith (No. 1546), like all this architect's work, is well-proportioned and well thought out, but this is not such a happy composition as most of his other designs for similar problems. We shall illustrate it shortly. No. 1552, Free Library, Mansfield, Notts, by Messrs. Sutton & Gregory is another and good example of the Classic, and is a fine line drawing. Mr. Hare's District Council Offices, Pontypridd (No. 1553), is worthy to be classed with his best work. The drawing is a fine one by Mr. H. F. Waring, and we shall illustrate it in a future issue. Messrs. Simpson & Allen's view of the Cartwright Memorial Hall (No. 1584) is illustrated in our centre plates this week. Mr. Walter H. Brierley's County Hall, Northallerton (No. 1609), is altogether happy and a fine drawing; we shall illustrate it.

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Supplement to
THE BUILDERS' JOURNAL AND ARCHITECTURAL RECORD,
Wednesday, May 4th, 1904.





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CARTWRIGHT MEMORIAL HALL: VIEW FROM NORTH. JOHN W. SIMPSON & E. J. MILNER ALLEN, ARCHITECTS. (ACADEMY, 1904.)

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Mr. Thomas J. Bailey has also sought Classic in his Higher Grade School, Cassland Road, Hackney (No. 1615), which is a distinct improvement. Mr. Edward Gabriel's "The Formidable" Nautical School, Portishead (No. 1620), is shown by a careful drawing, but it is far too large for the importance or merit of the building and occupies valuable wall-space. The building is harmless but unimaginative. Messrs. Swann & Wright's Library and Museum, Limerick (No. 1623), more Classic, is good, and better than most work in Ireland. Messrs. Goddard, Paget & Catlow's Free Library, Kettering (No. 1647), is admirable both in elevation and plan. We shall publish the drawing soon.

Haggerston Public Baths, by Mr. Alfred W. S. Cross, is shown by a fine drawing by Mr. C. E. Mallows (No. 1656), which we shall illustrate shortly. It is a very able design. Messrs. Lanchester, Stewart & Rickards exhibit a model of the upper portion of the tower to Cardiff Town Hall, with sculpture by Mr. H. C. Fehr, suitable but not new in composition. The tower is not particularly good.

We have already mentioned the domestic work, which is of special merit by reason of its freshness, but there are a number of houses shown which, if they exhibit no distinct advance, prove that there has been great improvement in the rank and file, following the example set by the leaders, and this gradual strengthening of the taste of the general body of architects gives hopes of leading to higher things. Beginning with the work of old leaders, we may mention Mr. Ernest George's Eynsham Hall, Oxfordshire (No. 1490), an Elizabethan kind of treatment with a multitude of windows, and Ruckley Grange, Shropshire (No. 1505). These are representative drawings in sepia and show no advance. Mr. George exhibits a fine water-colour from his own hand of the Royal British Pavilion at the St. Louis Exhibition, U.S.A. Brantridge Forest, Balcombe, Sussex (No. 1530), by Mr. Gerald C. Horsley, is hardly up to the standard we expect of this architect, and the drawing is distinctly not good. Mr. Leonard Stokes's cottage at Sunningdale (No. 1571) is plain and pleasing. His sketch design for Minterne, Dorset (No. 1577), is somewhat Gothic in flavour, but modern and square in treatment, characteristic of this architect. It is restful and good, but why battlements in these days? Mr. Edward W. Mountford shows an excellent small simple country house, No. 1465, and 1488, a house at Munstead. Mr. W. A. Pite exhibits a fine pencil drawing of the hall in Ealing Vicarage (1499). Mr. Frank S. Chesterton's houses on Norbury Manor Estate (No. 1514) are an improvement on the usual type of suburban house. He shows also a terrace of larger town houses called "The Rebuilding of Hornton Street, Kensington" (1629); we shall illustrate both these. No. 1539, a house near Leicester by Everard & Pick, is neat. The house and gardens at Berkhamstead by Mr. Thomas H. Mawson and Mr. Dan Gibson (1541) were illustrated in our issue for June 19th, 1901. The stables at Lingfield, Surrey, by Messrs. Ernest Runtz and Ford (1545), were illustrated in our issue for December 27th, 1899. Chelwood Manor, Sussex, by Mr. Andrew N. Prentice (1547 and 1548), is a powerful drawing of a rambling, picturesque, many roofed, half timber, stone and tile-hung house. Mr. Reginald Blomfield's Penn House, Weston, near Bath (1557), is very good studios Classic. Mr. E. P. Warren's house in Kensington Palace Gardens (1589) is distinguished. Mr. Thomas E. Collcutt's house at East Grinstead is modest, but not happy in proportion. Mr. T. Phillips Figgis's house at Wray Common, Reigate, was illustrated on p. 263 of our issue for November 27th, 1901. Gunterstone Cottages, Selsfield, by Mr. George O. Scorer (1637), is illustrated

on p. 210. Mr. A. Jessop Hardwick's house at Wolves Newton, Monmouthshire (1642), is a large line drawing which we have in hand for publication. Messrs. C. E. Mallows & Grocock are represented by a beautiful pencil drawing of a little lodge at Pembury, Kent (1659), which we shall illustrate. We shall also illustrate Mr. Arnold Mitchell's model of King Leopold's cottage near Ostend.

Mr. Basil Champneys's new Library at Somerville College, Oxford (No. 1433), is a miserable drawing and shows a long building with library on first floor, reached by staircases in detached blocks at either end, from which a straight corridor leads all along one side at the back. The ground floor is taken up with tutors' and students' rooms and bedrooms. It is Elizabethan and thankfully plain, but quite unimaginative. No. 1429, a pavilion for the Consolidated Clubs, Magdalen College, Oxford, by Mr. Ronald P. Jones, is in no wise a proper solution of the problem, and looks more like a country bungalow. Mr. W. H. Bidlake's warehouse, Great Charles Street, Birmingham (1441), is elaborate. It has red brick piers on a stone base with stone panel window fillings, a heavy stone cornice and a range of dormers in the roof, and a pediment split to allow light in a window—an abominable device. Mr. Frank L. Pearson's reredos for All Saints' Church, Maidstone (1446), interior view of St. Matthew's Church, Auckland, N.Z. (1447) and St. Helen's School, Abingdon (1442) are all pitiable, the last-named being very badly proportioned, unbalanced and rambling. Mr. Ralph S. Wornum's Carriage Court, Tynley Hall (1455), is a good line drawing. Mr. Paul Waterhouse's additions to Prudential Assurance Buildings, Liverpool, we shall illustrate. Messrs. W. S. Paul and R. C. James's War Memorial to Old Cliftonians (1524) is of inferior Gothic design. Ingram House, Stockwell, by Mr. A. T. Bolton (No. 1531), we shall publish, as also Mr. W. Campbell Jones's successful treatment of a street front in Colchester (1535). Mr. Henry Tanner, junr., failed to achieve anything original in Craven House, Kingsway (1536), though it is innocuous. Mr. Reginald Blomfield's South African War Memorial at Haileybury College (1557) is a simple obelisk with ball top placed on a charming base of cherubs, the names being displayed on shields; it is a fine conception. Messrs. A. M. Mackenzie & Son show their new buildings, Marischal College, University of Aberdeen (1602), an end-on water-colour giving a hazy vertical spirelet effect which probably represents what was desired but will not be obtained. Mr. Collcutt's Savoy Hotel (1603) shows a brown-toned faience quite different to the cream colour really obtained. The offices in Parliament Street, Nottingham, by Messrs. Brewill & Baily (1610), were illustrated in our issue for May 6th, 1903. Mr. John Belcher shows an interior view of the board-room in the Royal London Friendly Society's new building (1621), which is sober, but that is all we can say for it. Messrs. G. J. & F. W. Skipper's Norwich Union Life Insurance Society's new head office (1633) reminds one of their Norwich Opera House. It is distinguished Classic; we shall illustrate it shortly. Mr. Frederick R. Hiorns's study for the treatment of a colonnaded crescent road (1661) shows promise; our readers will have the opportunity of judging it for themselves. Mr. T. E. Cooper's proposed premises off Chancery Lane, London (1662), is a fine coloured drawing, which we shall publish. Mr. C. Stanley Peach exhibits a model and drawing of the Electricity Generating Station, Mayfair, with Italian garden on roof. Mr. W. H. Seth-Smith's School Chapel, Oxfordshire (1434), is an affectation of the crude with its rough-looking stonework and

heavy curved roof-trusses. Mr. Gerald C. Horsley's new Church of St. Chad, Longsdon, Stafford (No. 1506), is not well proportioned. No. 1515, design for the Church of St. Crispin, Yerendavna, Poonah, by Mr. J. N. Comper, a domed building plainly treated in the interior, is suggestive and successfully gives an Eastern flavour. Mr. Geoffrey Lucas's little hillside church is pretty (1527). The design for a new cathedral, St. John's, Umtata, South Africa, by Mr. G. H. Fellowes Prynne (1542), is very poor Gothic, with no local character. The proposed church, Wolverhampton, by Mr. Percy L. James (1554), is simply eccentric with its elongated tower, topped like a rifle cartridge. Mr. T. G. Jackson, R.A., contributes a pencil drawing of the new chapel for Hertford College, Oxford (1568), which is a building in his familiar Gothic-Classic mixture. Mr. G. F. Bodley, R.A., is represented by the new tower of St. John's Church, Cowley, Oxford (1581), a fine water-colour by Mr. Charles Gascoyne of a successful treatment, and a new roof at Magdalen College Hall, Oxford (1572), in Gothic style without originality. Mr. Tapper's memorial church to Archdeacon Livingstone, Malvern Link (1591), shows no great promise. Messrs. Boyd & Groves' reredos for St. Philip's Church, Newcastle-on-Tyne (1607), we shall publish next week. Mr. Charles Spooner's Church of St. Christopher, Haslemere, Surrey (1608), is distinctly good. Mr. H. P. Burke Downing has chosen Classic for the west front of his new church at Peckham (1617), and has achieved a fine result; we shall illustrate this shortly. Mr. Francis Bedford's design for a new organ and fittings for Headingley Hill Congregational Church, Leeds, is very fine. Mr. J. Oldrid Scott's St. John's Church, Palmer's Green (1634), we shall publish in a few weeks' time. Mr. William A. Pite's Presbyterian Church, Frognal (1648), represents a good type of suburban work.

NEW MEDICAL SCHOOL.

IN connection with Dundee University College new medical school buildings are at present nearing completion. The plans were originally drawn by the late Mr. J. Murray Robertson and completed by his successor, Mr. James Findlay. The architecture is a mixture of Scottish and Flemish. The ground floor is to be devoted to physiology, and in addition to the classroom there is accommodation for photography, history, instruments and laboratory. Materia medica and public health will also be accommodated on the ground floor; pathology and gynecology on the second floor; and anatomy on the third floor, while the building is surmounted by an observatory for astronomical purposes. The total cost will be about £20,000.

Views and Reviews.

Estimating.

We are pleased to see a second edition of this book, for it has provided Mr. Rea with a convenient opportunity to thoroughly revise and recast his original building prices, which were far from being what they claimed to be, namely, a fair average index of current London rates. When reviewing the first edition we drew attention to this serious defect in an otherwise useful work, and our remarks have apparently received careful consideration, for we notice that the author has attempted to bring this portion of the book into line with present conditions. The price of brickwork in lime-mortar has been increased from £13 12s. to £16 7s. 6d. per rod, whilst brickwork in cement is raised from £14 7s. to £18 3s. 6d. per rod. Similar alterations are to be found in almost every

item of importance, provision being now made not only for the usual London labour rates but also for establishment charges and other expenses connected with an ordinary builder's business. These important factors in sound and profitable estimating had not previously received the attention that they deserved.

A considerable amount of new matter has been introduced in this edition. The preliminary notes explaining the usual terms and conditions of trading adopted by merchants, the classification of goods for railway rates, &c., have been remodelled and extended. The chapter on "Excavator" has been divided and rearranged into three, dealing respectively with excavator, concretor and drainlayer. Additional examples of analysis of cost are given in these trades, for the purpose of illustrating the method of ascertaining the cost under varying conditions, so that this section is now much more complete. The chapter dealing with "Cost of buildings" has also been amplified, and includes about a hundred new items, together with further particulars as to the different methods adopted in the execution of works. For ordinary buildings a contract based on properly prepared bills of quantities is recommended as the best and cheapest method, and experience goes to prove that this system is usually the most satisfactory to the building owner.

These extensive revisions and additions have increased the size of the book by about sixty pages, but we think that the author attempts to cover too much ground by including matter which is only indirectly connected with estimating, and which has been much better dealt with in every standard work on building construction. The numerous trade notes and memoranda

relating to the quantities, weights and measures of building materials constitute a very valuable feature of Mr. Rea's book; but the insertion of elementary information respecting the uses of various timbers; the composition of wrought iron, cast-iron and steel; the manufacture of plaster-of-Paris, Roman cement, &c., in a book of this

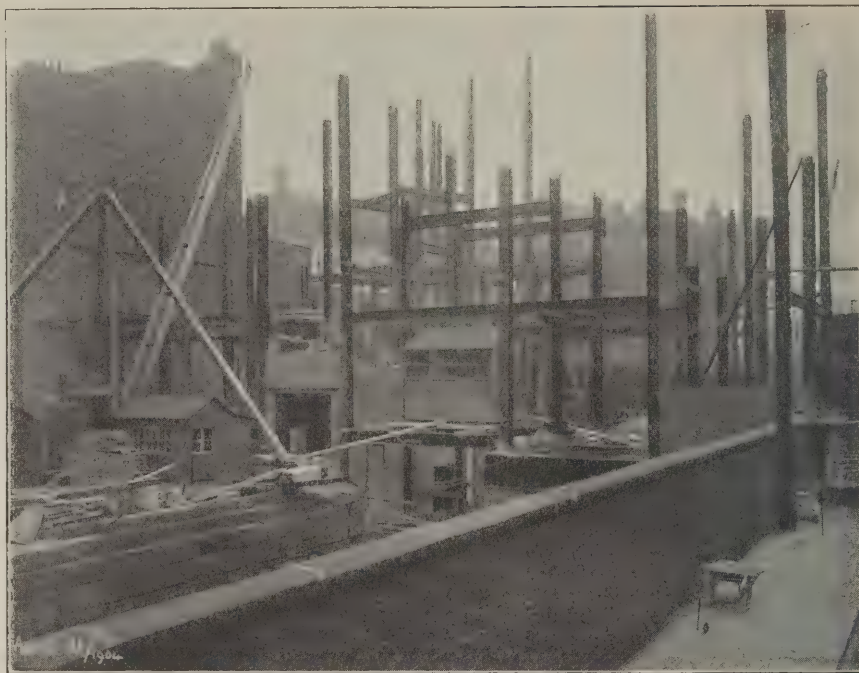
character merely leads to confusion of arrangement and complexity in general plan. The work would gain in value as a text-book on estimating, and also as a handy book of reference for practical estimators, by the elimination of such simple and unnecessary padding. The inclusion of a few leading prices for electric bells and fittings, mahogany doors and sashes, shop-front and office fittings, church and school fittings, fireproof partitions, pavement lights, and other similar items ordinarily dealt with in a builder's price-book, would prove much more useful.

Taken as a whole, we have no hesitation in recommending the book as a trustworthy guide to practical estimating. The student will find all essential principles and details fully explained, whilst the experienced contractor will appreciate the large amount of technical information and valuable trade data which has been brought together into one volume.

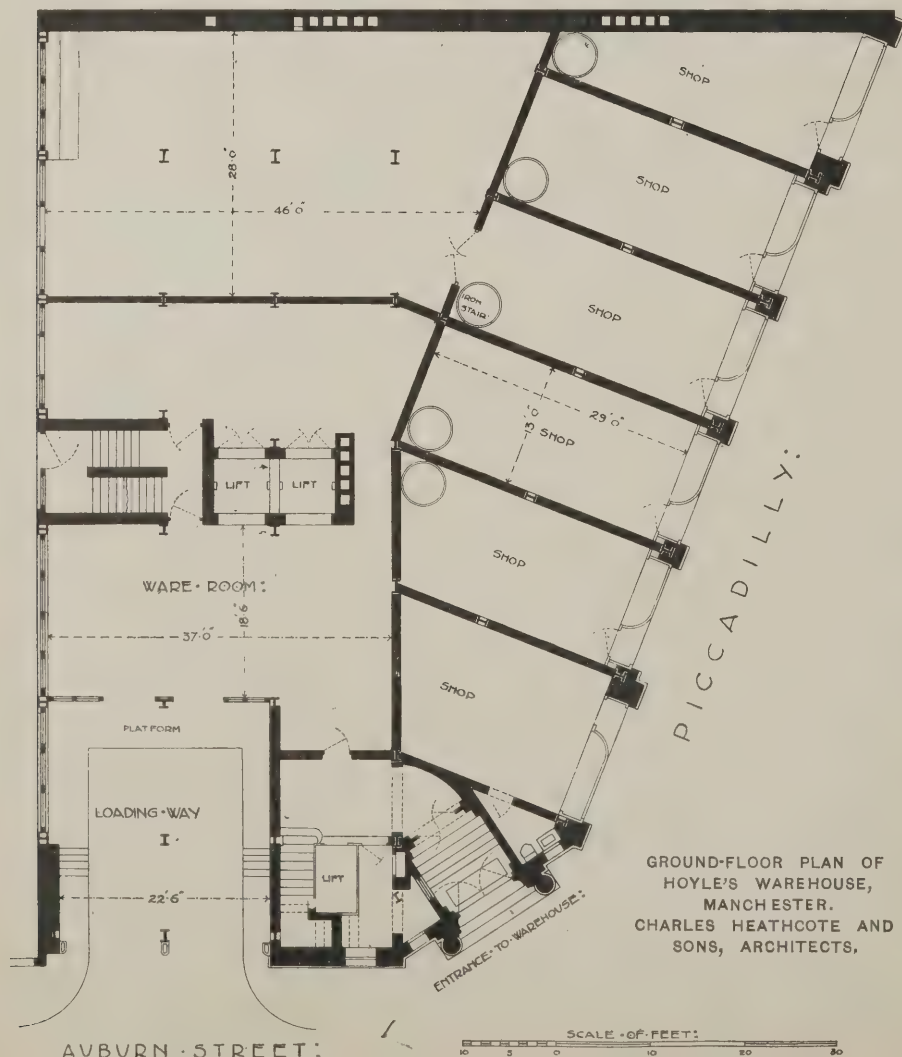
"How to Estimate," by J. T. Rea, F.S.I. Second edition, revised and enlarged. London: B. T. Batsford, 94, High Holborn, price 7s. 6d. nett.

HOYLE'S WAREHOUSE, MANCHESTER.

THE illustration above, showing the condition of work on this building on April 22nd, is the seventh of the series which we have published week by week. It is taken from a different standpoint to the others. This view shows the walls of the canal, indicating where the latter runs under the new building, necessitating night work on that portion. The view does not show the entire works, as the heavy steelwork of the basement is now hidden, by reason of the fireproof ground floor being mainly in position (on the near side of the photograph). The building is one of "steel construction," having steel stanchions, beams and joists, and the floors of "Fram" fireproofing. It covers about 800 sq. yds. of land. Our first photograph showed the commencement of the stanchion fitting. The present photograph indicates the excellent speed obtained, for the furthest stanchion seen on the photograph is part of the fourth floor (the sixth reckoning the basement and ground floor). The first stanchion was fixed on March 7th. The contractors for the whole building are Messrs. Neill & Sons.



THE BUILDING OF HOYLE'S WAREHOUSE, MANCHESTER (Photograph taken on April 22nd).
CHARLES HEATHCOTE AND SONS, ARCHITECTS.



IN PARLIAMENT.

(By our Press Gallery Representative.)

A CROP of questions have recently been addressed to the Chief Secretary of Ireland as to the building of the new College of Science in Dublin, the foundation-stone of which it was arranged should be laid by the King during his visit to Ireland.

Answering Mr. Nannetti, who asked whether the materials for the erection of the work and decorations in connection with the laying of the foundation-stone had been imported from London, and whether steps would be taken to secure the use of Irish materials and local workmen in the erection of the building, Mr. Wyndham stated that tenders for building were invited from Dublin builders, and one of these was accepted. This included all the builder's work in preparing the part of the site available as well as the foundation piers on which the first stone would rest, and also the construction of the pavilion, approaches, &c. Irish materials were being used as far as possible.

On April 26th Mr. Nannetti asked the Chief Secretary for Ireland whether he was aware that contracts were being given away to English and Scotch firms for the building work and other operations in connection with the Board of Works in Ireland, without being put up to competition or advertising of tenders for the work (see third column on this page). The hon. member also asked why this practice was being carried on, and whether the Chief Secretary had seen the correspondence between the Master-Builders' Association and the Board of Works protesting against the continuance of this treatment of Irish contractors. Mr. Victor Cavendish, Financial Secretary to the Treasury, who replied to the question, said the usual rule was to obtain competitive tenders, but circumstances of urgency arose from time to time and made it necessary to depart from this rule. The facts as to the temporary supper rooms and servants' rooms were explained by his predecessor in July last. The annexe required for the Stationery Office was urgently needed, and was obtained from a Glasgow firm which was in a position to supply it promptly, as it dealt specially in this kind of building. He had seen the correspondence referred to.

According to the annual report of the Local Government Board for Scotland it would appear that there is at present a boom in hospital building in the northern half of the Kingdom. The Local Government Board gave its approval to the sites of hospitals for the Deer District of Aberdeen at Strichen, the Ayr district near Ayr and the burghs of Dumfries, Musselburgh and Perth. The site of a joint small-pox hospital near Kilwinning for a number of Ayrshire burghs was also approved, as well as extensions of the sites of the Annan District and Burgh Joint Hospital, Kinross County and Burgh Joint Hospital, Penicuik Burgh Hospital and Wishaw Burgh Hospital. The Board approved plans of a hospital for the burgh of Ayr and of a joint hospital for the Melrose district and burgh, the sites and plans for several hospitals in the Highlands, amended plans in connection with the Kirkcudbright County Combination Hospital and the joint hospital for the Eastern District of Haddington and Dunbar; the plans of additions to Annan District and Burgh Hospital, Peebles County and Burgh (small-pox) hospital and Penicuik Burgh Hospital.

Lord Balcarras, representing the First Commissioner of Works, informed Mr. Coghill on April 19th that good progress was being made with the building of the Victoria and Albert Museum, the work being up to the first-floor level. There was no reason to think that the buildings of the Museum and of the Royal College of Science would not be completed by the dates named in the

contracts, namely, February 23rd, 1907, and June 1st, 1905, respectively.

Once a year Members of Parliament concern themselves with purely domestic matters, the occasion being the discussion of the vote for the Houses of Parliament buildings. This year the estimate amounts to £32,300, and on Thursday last (April 28th) members gave expression to their various opinions on the manner in which they are housed when on duty. Mr. Wylie, whose pet theme is the sanitation and ventilation of the House of Commons, complained that nothing had been done in the way of carrying out the recommendations of the Committee which considered the ventilation and sanitation of the buildings. He condemned the system of heating by steam-pipes, but mentioned with some satisfaction that by the use of appliances 10lb. of dust was now carried out of the chamber daily which used to enter the lungs of hon. members. Mr. F. W. Wilson said it had been demonstrated by scientific tests that the bacterial organisms in the air of the House of Commons were 5 per litre, in the committee rooms 13 per litre, and in the smoking-rooms 30 per litre. Sir Michael Foster said the air of the House, compared with that of other buildings in which there were large assemblages of people, was very good. Sir Walter Foster considered the atmosphere to be as good as that of any other place of public assembly in the United Kingdom. They did not want change of structure so much as attention to cleanliness, and this cleanliness must be extended to the outside of the buildings. He made a complaint about the inadequate lighting of the approaches to the House.

Lord Balcarras, representing the First Commissioner of Works, said the lighting and proper cleaning of the lamps would be attended to. Complaints had been made about the temperature of the House, but what was hot for one member was cool for another. The temperature at the moment was 62, and it was impossible to satisfy everybody. As to frescoes or mosaics in the Outer Lobby, if the Treasury found the money he would find the mosaics. The outlay of £30,000 which was recommended by the Select Committee for the improvement of smoking-room and dining-room accommodation had not been passed by the Chancellor of the Exchequer, and he had no announcement to make on the subject. The Office of Works had been repeatedly asked to find accommodation for this or that service, but they could not find more rooms. At present there was only one room in the whole of the premises that was unoccupied, and it was only about 12ft. by 6ft. Explaining the system of bringing air into the chamber, he said it was introduced on the terrace below the dining-room and brought through a long passage three storeys under the chamber. In foggy weather it was passed through cotton wool and cleansed, and then going into the central chamber it was heated, being afterwards distributed in the chamber immediately below the House, passing upward by the central gangway and the lateral gangways. It was open to objection that the air they consumed should rise from the floor, but no one had been able to propose an alternative solution of the difficulty. The only effective scheme mentioned by the Committee involved the shutting of all doors and windows. There were seventeen doors into the House itself and windows all round, and if these were not to be opened it would be out of the question to reverse the present system. There was no real alternative system, but several improvements would be effected. At present the air was drawn out through the glass roof, the gas above which served as a drawing power. It then went up to a huge exhaust furnace and by that means was drawn out to the open air. They proposed to do away with

that furnace and substitute a large fan. The air would in future go through three water streams. Dirt was what they suffered from more than want of fresh air, and great progress had been made in cleaning. They had taken steps to build a disinfecting chamber and had adopted the vacuum cleaning system, which had effected an enormous improvement. He mentioned that on the previous Saturday 15,000 people passed through the Houses of Parliament. On the whole he believed that the cleaning and ventilation of the House of Commons were better than what existed in any theatre, church, court of law or town hall in the country. Enormous improvements had recently been made, and when the system of vacuum cleaning was still further extended the greatest nuisance—dirt—would be removed.

Builders' Notes.

L.C.C.'s Brickyard.—It has been found necessary to make a grant of £2,000 to keep going the brickyard of the London County Council at Norbury.

The Sanitary Work at the new Savoy Hotel, including baths and lavatories, has been entirely carried out by Messrs. Doulton & Co., Ltd., of Lambeth.

Scottish Building Trades Federation.—The half-yearly meeting of the Executive was held recently at Aberdeen. The general tone of the reports showed that trade was dull in almost every district throughout the country.

Dispute Settled at Leicester.—At the North Evington Infirmary a dispute arose as to whether bricklayers or plasterers should fix "Mack" slabs or blocks. Mr. Alderman Smith decided in favour of the bricklayers.

The Infectious Diseases Hospital at Horwich is being warmed and ventilated by means of Shorland's double-fronted patent Manchester stoves with descending smoke flues and patent Manchester grates, supplied by Messrs. E. H. Shorland & Brother, of Manchester.

Messrs. Hollick Brothers & Abbott, of 5 and 8, Miles Lane, London, E.C., have taken over the business of Mr. Joseph T. Pickering, late managing partner of the London Hoist and Machinery Co., in the supply of lifts, lifting appliances and chains, &c., which department is now carried on under the name of The Chain and Pickering Hoist Co.

Teesside Joiners' Strike Settled.—The joiners engaged in the building trade in Stockton, Thornaby, Middlesbrough and West Hartlepool, who had arranged to strike against a reduction of 1d. an hour, have accepted an amended offer from the master-builders to take ½d. reduction, together with certain concessions to the men in regard to the working rules.

Irish Builders and the Board of Works.—At the instance of the Dublin Master-Builders' Association, Mr. Nannetti put down a question to the Financial Secretary to the Treasury with respect to the practice of the Irish Board of Works giving contracts to English and Scotch firms without competition or public announcement of any kind. Three cases were cited in which this had been done recently. The first was the new supper-room at Dublin Castle, which cost £3,500, the contract being given to Messrs. Humphreys, of London; the second was the new servants' rooms in the Viceregal Lodge, which cost £500 and was given to the same firm; while the third was the work at the stationery office at the Custom House, Dublin, on which £400 was expended, the work being given to Messrs. Spiers, of Glasgow.

Bricks and Mortar.

Aphorism for the Week.

There is a noble way of being ugly. There are daring and gaudy buildings that manage to be offensive without being contemptible.—
R. L. STEVENSON.

Our Plates.

THE drawing of the entrance front to "Park Down," Surrey (built for Captain F. E. D. Acland from designs by Mr. E. Guy Dawber) is hung in this year's Royal Academy exhibition. The house is rough-casted, with a red-brick base and red tiles on the roof, and glazed green ridge tiles. The windows are all casements, supplied by Mr. John Pye, of Moreton-in-Marsh, Glos. The builders were Messrs. Read & Wilkinson, of Roehampton. The plan at one corner of the view of the garden front shows the accommodation on the ground floor.—The drawing showing the Cartwright Memorial Hall at Bradford from the north (Messrs. John W. Simpson, F.R.I.B.A., and E. J. Milner Allen, A.R.I.B.A., architects) is also hung at the Academy this year. The building is erected on the site of the old mansion in Lister Park where Lord Masham formerly resided and was opened about the middle of last month. It commemorates Dr. Cartwright, the inventor of the power loom and other textile machinery, and will form the centre of the forthcoming Bradford Exhibition. Plans of it will be found in our issue for May 17th, 1899.

Preserving the Buildings of India.

ON the occasion of the final reading of the Ancient Monuments Bill in the Vice-regal Legislative Council on March 18th, Lord Curzon described the measure as the coping-stone of a policy in respect of archaeology and the remains of the past which the Government of India had pursued with fits and starts throughout the past half-century, but only with sustained and unremitting ardour during the past few years. He found when he began to enquire into the matter that the Government of India had set no standards to which local administrations

ought to conform, and that there was neither co-ordination, nor system, nor control. The post of Director-General of Archaeology, which had been in abeyance since 1889, had been revived; grants were made to local governments to supplement their own expenditure, and they were stimulated, as were also the Native States, to renewed efforts by a definite programme of conservation and repair. In 1898-99 a sum of less than £7,000 per annum represented the total contribution of the Government towards the study or preservation of the most beautiful and priceless collection of ancient monuments in the eastern world; the expenditure was now £37,000 a year. Wherever possible they had recovered and renovated the dwellings in life and resting-places in death of those master builders, the Mussulman emperors and kings, as well as other far-famed treasures of Indian archaeology. A second aspect of their work had been the recovery of buildings from profane or sacrilegious uses, and their restitution to the faith of their founders, or at least to safe custody as protected monuments. They had also taken steps for the custody of rare and

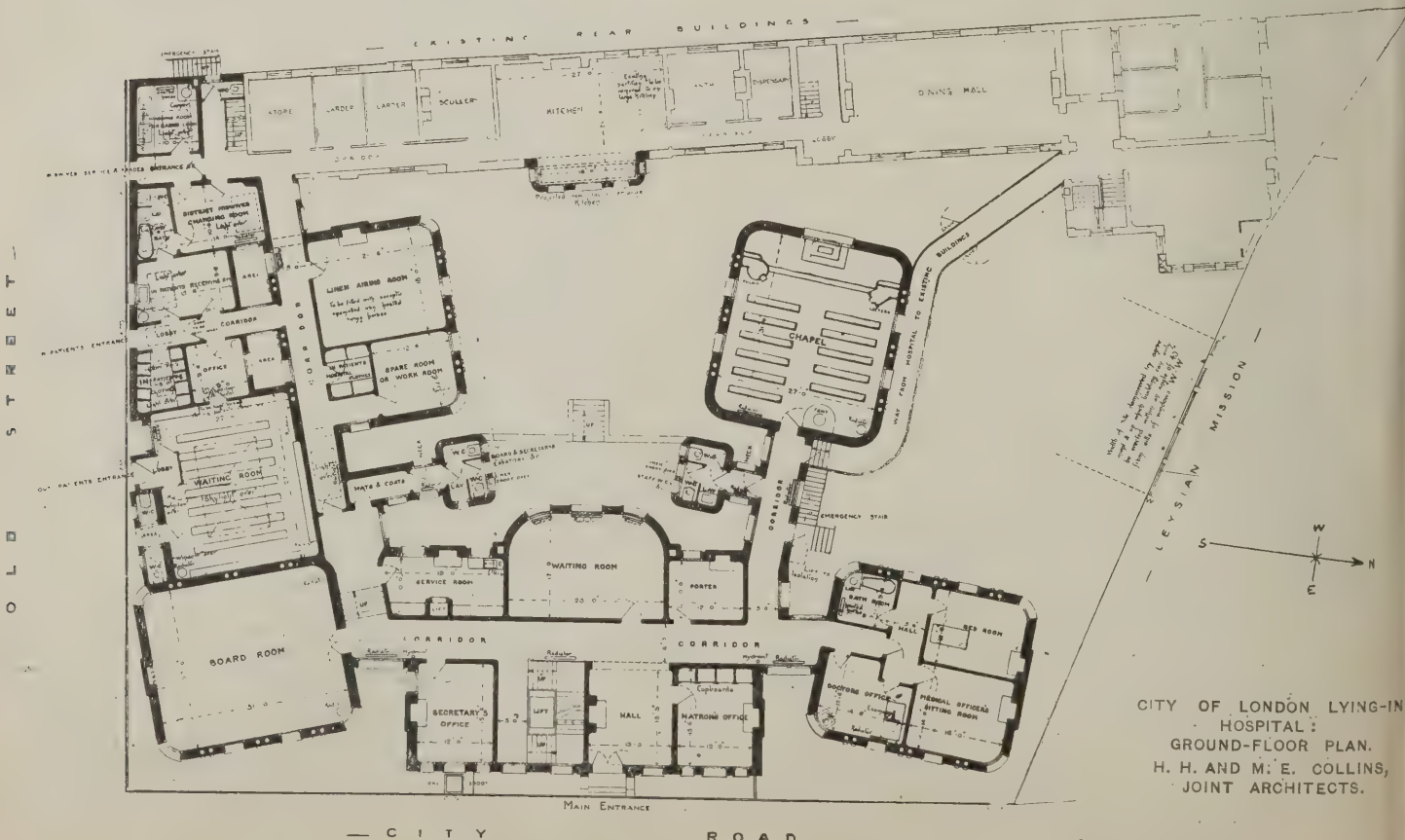
interesting objects that had either been torn from their surroundings or had disappeared, the principle observed being that such objects could best be studied in relation and in close proximity to the buildings to which they belonged. Accordingly, museums had been started at Bijapur, Malda, Agra, Peshawar and other places.

London Lying-in Hospital.

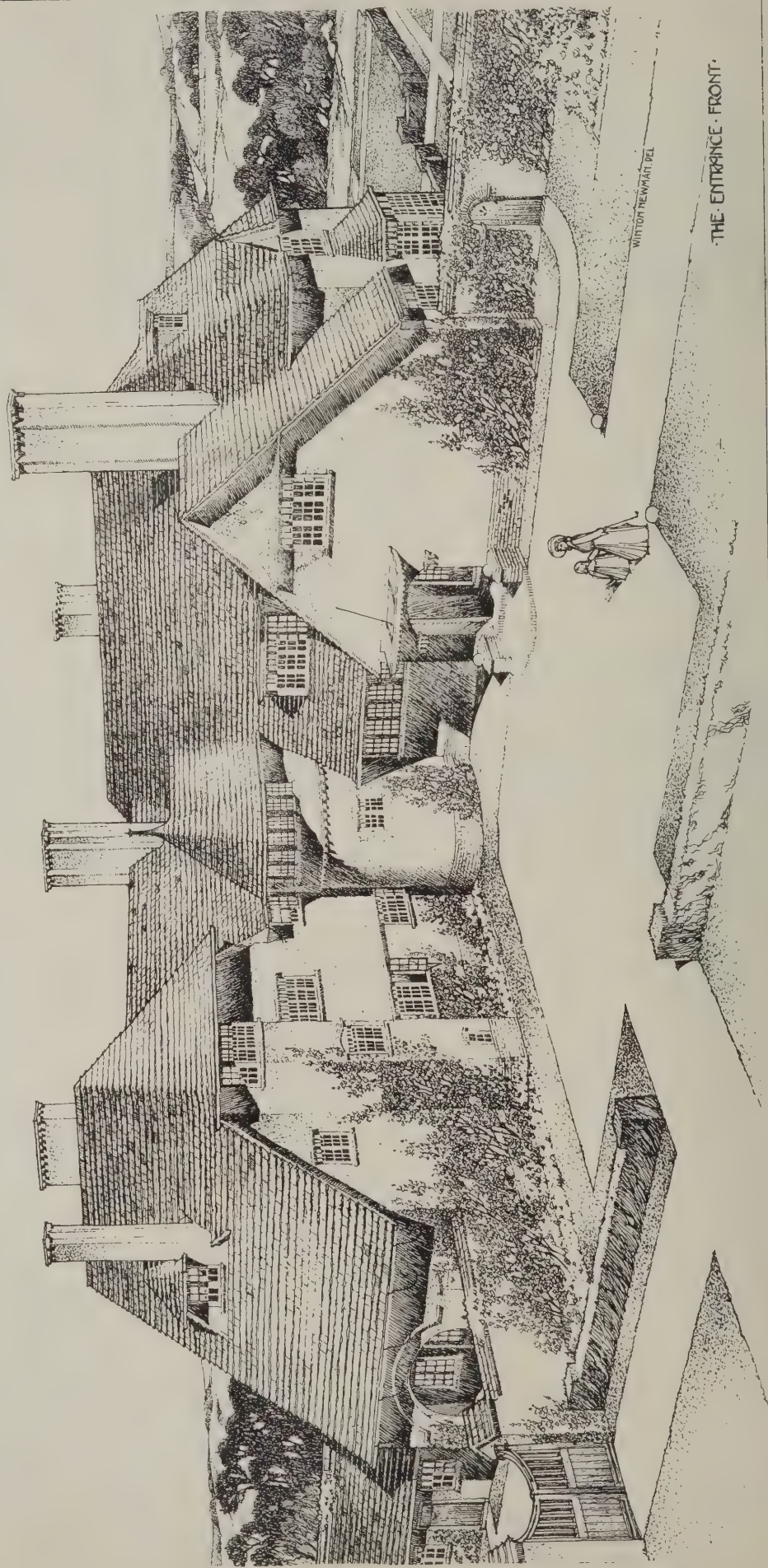
WE publish this week the first-premiated design in the recent limited competition for the rebuilding of the City of London Lying-in Hospital at the corner of City Road and Old Street, the successful architects being Messrs. H. H. & M. E. Collins, of 61, Old Broad Street, E.C. In this competition the plan was the all-important matter to consider, and it was in respect of it that Mr. Rowland Plumble, the assessor, awarded the premium of one hundred guineas to Messrs. Collins; but it should be stated that several modifications are being made by the architects, both in the plans and elevation, in order that the hospital as rebuilt may embody every possible advantage.



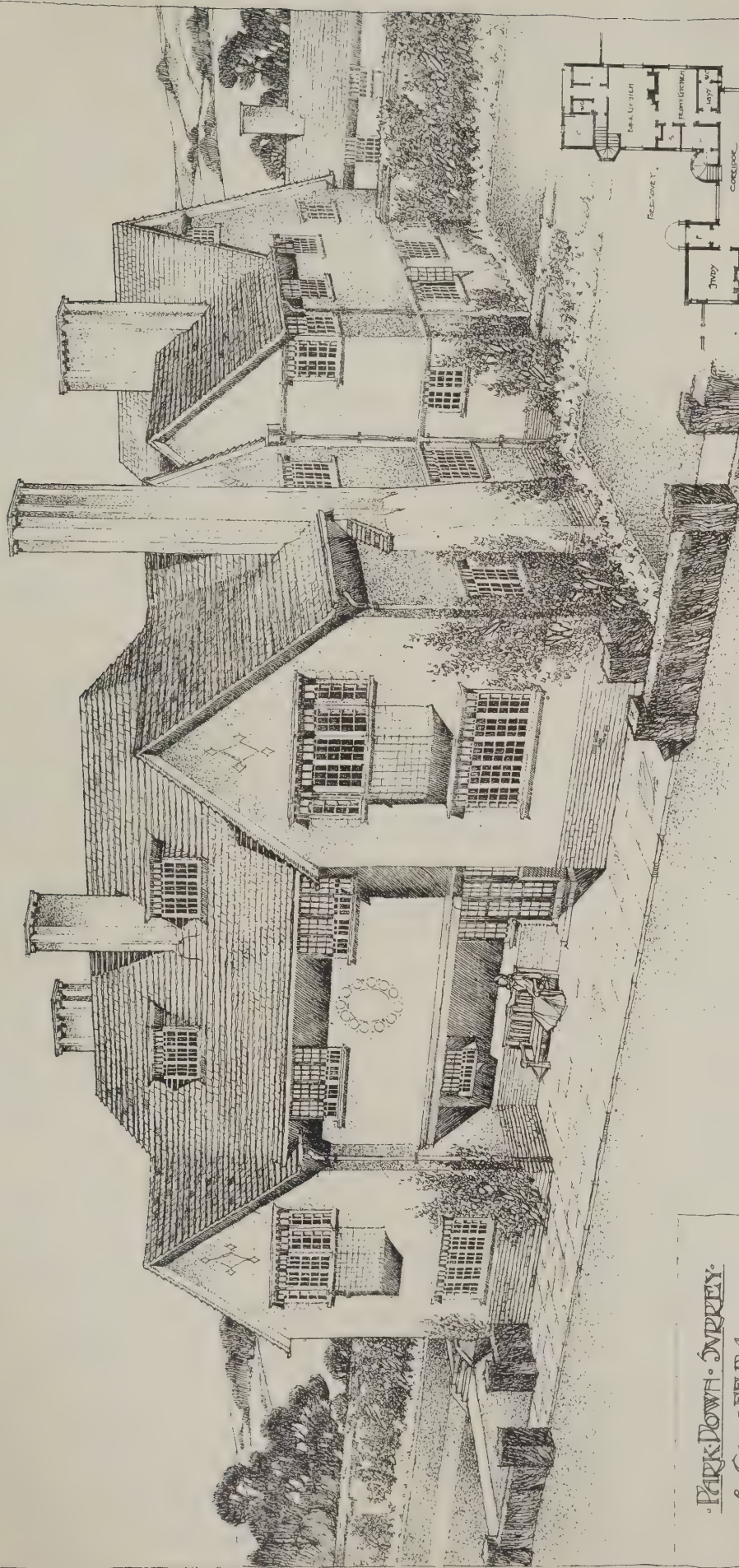
FIRST-PREMIATED DESIGN FOR THE LONDON LYING-IN HOSPITAL, ELEVATION TO CITY ROAD. H. H. AND M. E. COLLINS, JOINT ARCHITECTS.



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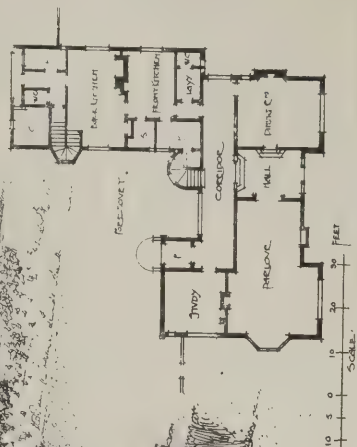


THE ENTRANCE FRONT.

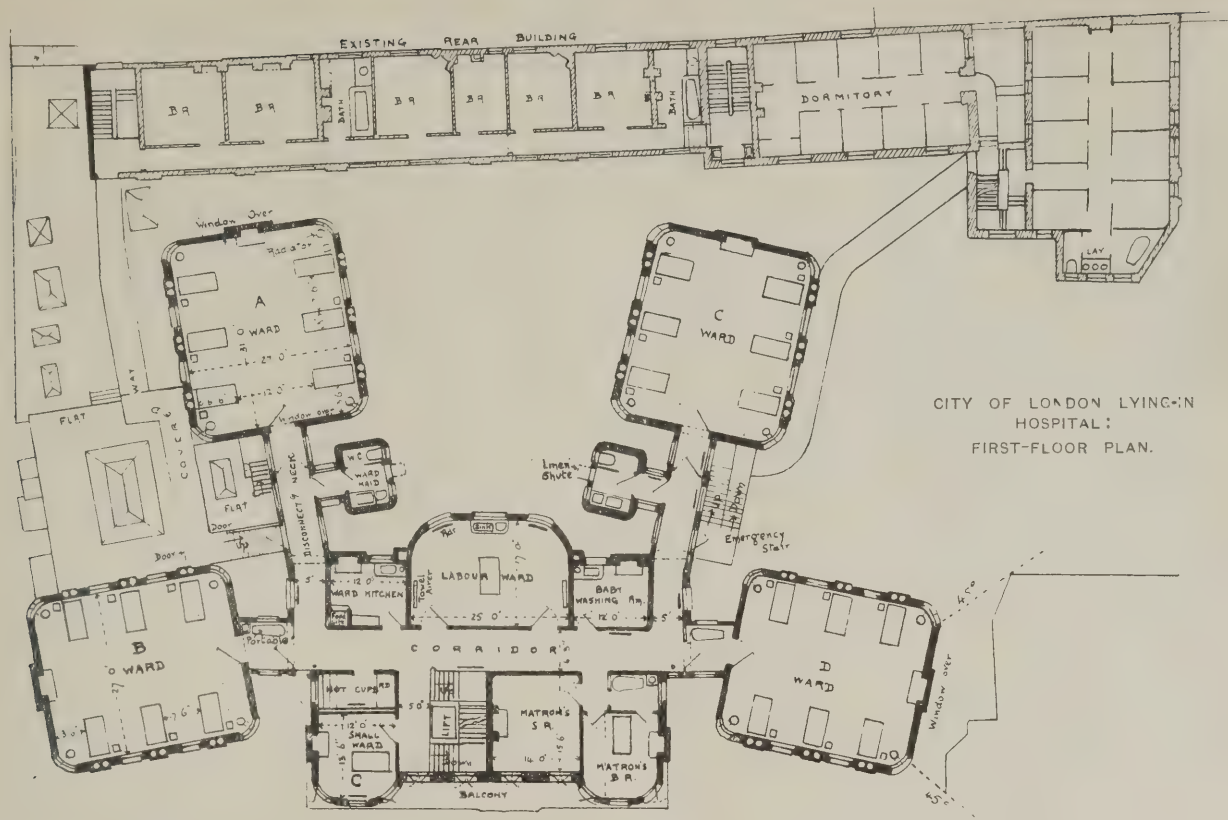


GARDEN FRONT

Park Down. Surrey.
By CAPT. R. D. CLARKE.
 E. GUY DAWBER ARCHT.



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Enquiries Answered.

The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Drawing Greek Volute; Central Load on Beam.

PERPLEXED writes: "(1) Please explain the method of finding the size of the squares on which one works as a base in order to strike a Greek volute. The volute I have in mind is that from the Temple of Ephesus. (2) Kindly explain graphically how to obtain the equivalent central load where a beam 20ft. long is loaded with 5 tons 7ft. from one end and 4 tons 6ft. from the other."

(1) See a reply to an enquiry on p. 477 of our issue for January 23rd, 1901. (2) See the article on "Building Construction" on pp. 283-286 of our issue for December 4th, 1901.

Oak and Teak.

BRIGHTON.—QUERIST writes: "(1) Is oak more expensive than teak for joiner's work, including labour, and what is the difference in cost per cent.? (2) Does fumigated oak retain its dark colour when in exposed positions, and will oak weather as satisfactorily as teak? (3) What would be the additional percentage for fumigating?"

(1) The difference in price of the raw material can be seen from our list of current market prices. The labour on oak and teak is about equal. (2) Oak weathers a much better colour than teak. We do not agree with fumigating it, or otherwise interfering with its natural colour. It is far better to allow it to weather to its own beautiful silvery grey. Fumigated oak will not remain dark for long when exposed to weather. The lasting quality of oak is quite as great as teak. (3) Roughly 10 per cent., though it depends upon the shape and size.

Gas-holders.

GILLINGHAM.—BUILDER writes: "(1) Is it usual to plaster in cement the inside walls of a gas-holder? If not, how are they finished? (2) Would the brick floor (6in. thick) be set in cement or lime-mortar, with bricks on edge or flat? (3) Would you consider it safe to construct a gas-holder of 37ft. diameter within 5ft. distance (above ground) of another gas-holder of the same size, and in use? (4) Does 'Specification' give any information about the construction, &c., of gas-holders?"

(1) We presume you mean a gas-holder tank. It depends entirely on the way the tank is constructed; it is not usual to render the walls. Good hard well-burnt stocks laid in lias lime mortar (1 of lime to 2 of sharp river sand), with the joints well flushed up, will make a very good tank, but the quality of the bricks must be considered. All brick tanks must be puddled under the floor and at the back of the walls. Taking the diameter of your tank, the depth would be about 14ft. to 16ft. The walls in this case would be $3\frac{1}{2}$ bricks thick at base of footings; 2½ bricks from bottom of wall to a height of 6ft.; 2 bricks for the next 5ft.; and 1½ bricks for the remaining portion, the height of wall above the ground being usually 1ft. 6in.; finish with brick-on-edge or 6in. stone coping. The puddle should be of good well-tempered clay mixed one-third of its bulk with sand, deposited in layers and well trodden. Its depth under the floor and at the base of the walls should be 2ft., tapering to 1ft. 6in. at ground level. The piers for the guide standards must be allowed for; they would be about 2ft. 6in. square for this tank and brought up from the foundations. (2) This question is partly answered above. Cement-mortar would give greater strength. The bricks may be either flat or on edge. It is not usual now to excavate down to a level floor, but a cone of earth is left in the centre of the excavation. In the present instance this, at the apex, would be about 7ft. high. (3) This depends entirely on the stability of the ground, but in any case would be risky, and would involve very elaborate timbering, and possibly concreting

the entire space between the tanks. If the new holder must be erected so near, we should be inclined to advise the erection of a gas-holder with a wrought- or cast-iron tank wholly above the ground. (4) No. The subject will, however, be dealt with in the "Municipal Engineers' Specification," to be issued later in the year from these offices; but not in the first number. Newbigging's "Handbook for Gas Engineers and Managers" gives full particulars about the construction of gas-holder tanks. The book is out of print, but a new edition will be published in about a month's time by Mr. Walter King, 11, Bolt Court, Fleet Street, price 18s. A detailed account of the construction of a concrete tank at Newcastle is given in the "Journal of Gas-lighting" for July 2nd, 1901, and a copy can be obtained post free from the same publisher for 6½d. J. H. E.-D.

St. Mary's Church, Cambridge; Stone Church, Kent.

BOLTON.—INTERMEDIATE writes: "Kindly give some particulars of St. Mary's Church, Cambridge (other than those given in Vol. 2 of Pugin's 'Specimen'), and of Gedling Church, Nottinghamshire. Where could I obtain a plan, &c., of each? Also, where could I find a plan of Stone Church, Kent?"

After an exhaustive search I can find nothing about Gedling Church, Nottinghamshire. There are two churches of St. Mary at Cambridge. One is the church of St. Mary by the Market, better known as Greater St. Mary's. It was begun in 1478, and the main structure, roughly speaking, belongs to the period between that year and 1491. The character of the nave is excellent, the surface ornament in the spandrels of the chancel arch and nave arcade being exceptionally good; the depression of the arches is very slight. Characteristically, the piers have no capitals, but a small shaft with a plain capital carries the innermost moulding. But the best feature of the interior is the high plain clearstory, from which the church originally received its light: this forms, as it were, a wall of glass running along the upper storey of the church. The west window is exceptionally good Gothic. There are some

splendid chimes in the tower, called the "Cambridge Chimes." They were composed by Dr. Jowett in 1790. The other church is called Little St. Mary's, to distinguish it from the University church. It is a lovely example of the later Decorative style, and was built in 1352 on the site of the old church of St. Peter. There is a tradition that Alan de Walsingham had something to do with it, and the very elaborate tracery of the east window is certainly worthy of a master's hand. It was for 280 years the chapel of Peterhouse, and, as at St. Benet's, the passage from college to church is still preserved. The shape is that of a college chapel: there are no side aisles, and save in the two bays south of the sanctuary, the church is lighted by a series of very large windows. It was restored by Sir Gilbert Scott; and, since then, a western choir vestry has been added. A plan of St. Mary's Church at Stone may be found in William Caveler's "Gothic Architecture" published in 1836, and a good description of the church with plates may be found in Street's "Church of St. Mary, Stone," published in 1867. An illustrated description was also given in *THE BUILDERS' JOURNAL* for October 4th, 1899. G. A. T. M.

Assistant Surveyors, Admiralty.

KETTERING.—OLD SUBSCRIBER writes: "I am thinking of preparing for the next examination for appointments as assistant surveyors in the architectural and engineering department of the Admiralty. Is there a

temporary staff in this department, and if so, do members of it have a better chance of nomination than outsiders of good professional training? What course should be taken to obtain a berth on the temporary staff? Who is the best coach for this examination (by correspondence)?—the subject being mathematics, English composition, quantity surveying, estimating and valuing, specifications and contracts, chain surveying and levelling, and one modern language (French)."

Nominations are perhaps easier to obtain by members of the temporary staff than by others, though the examinations are openly advertised and anybody of undoubted qualifications within the age limits would be admitted. Applications for positions on the temporary staff should be made to the Director of Works, H.M. Admiralty, Northumberland Avenue, W.C. We could not advise you about a tutor, but would refer you to our advertisement pages. M.

Buildings to Measure around Ashford.

ASHFORD.—W. H. writes: "Are there any suitable Early English, Decorated or Perpendicular buildings within twelve or fifteen miles of Ashford which I could measure for the R.I.B.A. intermediate examination?"

You write from Ashford, and could probably obtain more reliable information locally than from us. Ashford Church, for instance, is a well-known example of the Perpendicular period. Littlebourne Church

is a celebrated Early English example, while others of the same date are Paddlesworth and Sturry. One of the Decorated windows at Chartham is illustrated in Rickman's "Gothic Architecture," and is clearly sufficient for the purpose named—both characteristic and beautiful; while Willesborough, though not so well known, is nearer to Ashford, and may do just as well. Headcorn church is another Perpendicular example, as are also Lydd, Maidstone and Tenterden churches. G. A. T. M.

Perpendicular Work in London.

LONDON, S.E.—A STUDENT writes: "What is the best piece of Perpendicular work in London suitable to measure for the R.I.B.A. intermediate examination? The Dean of Westminster will not allow measurements to be taken in Henry VII.'s Chapel."

You are unfortunate in not being allowed to measure in Henry VII.'s Chapel. Probably, however, you would have little difficulty at St. Saviour's, Southwark, where the reared is of the period you name; or at St. Bartholomew-the-Great, Smithfield, which contains a peculiar and very beautiful Perpendicular oriel in the nave. Failing these, a window might be attempted at St. Margaret, Westminster. G. A. T. M.

Hot-water Supply.

PERTH.—T. O. writes: "I send a sketch (not reproduced) of a hot-water circulation which does not work satisfactorily. At the sink and bath there is always a puffing noise as if air were in the pipes. Is this due to the feed cistern being too low?"

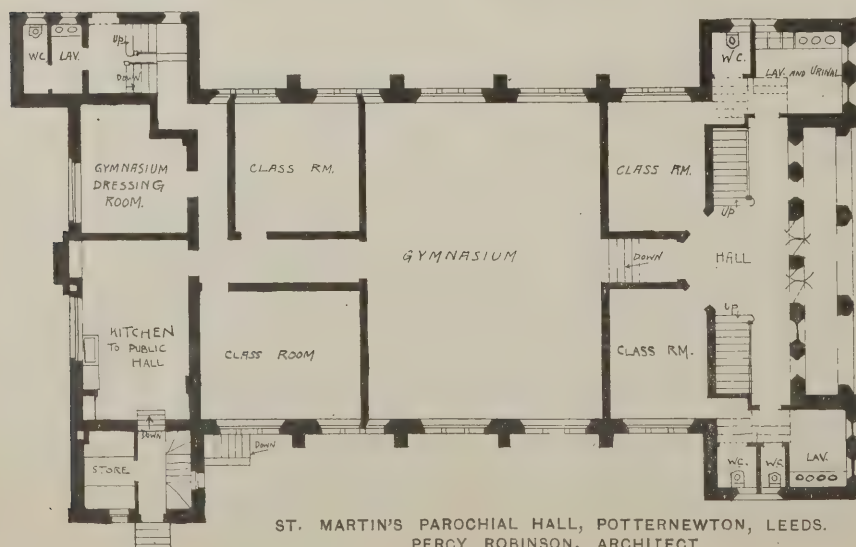
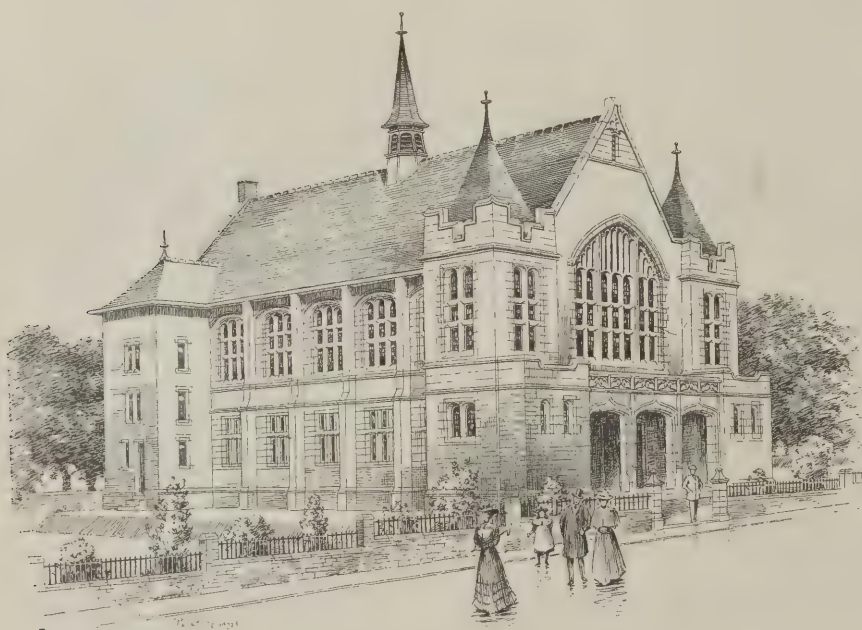
The sketch sent is too rough to be of any use in elucidating the question, and is also misleading; for the turning-up of the secondary flow-pipe to act as an expansion pipe behind the cistern gives one the impression that the cistern is a hot-water tank, which quite alters the question. There may be one of two reasons for the constant puffing noise at the sink and bath taps. The secondary flow-pipe may be trapped. It may be higher at the point where the branch is taken off than it is at some point between the branch connection and the point where the expansion pipe leads through the roof. The air and steam would collect at the highest point and be drawn off when the taps are opened. If upon careful examination the secondary flow is found not to be trapped, then the supply pipe to the cylinder must be enlarged, say to 1½ in. diameter; for when the taps are opened the water flows from both sides of the branch, and what is standing in the expansion pipe is drawn off, and thus air is drawn in after it. The water can be drawn much more rapidly from the 1 in. diameter secondary flow to bath and sink than it can be supplied from the ¾ in. feed to cylinder. This feed should be 1½ in. diameter. G. A. A.

Covering for Floor.

S. D. writes: "I am desirous of obtaining a smooth and lasting finish, clean and fresh-looking, on a cement skimmed concrete floor subjected to a good amount of walking upon, and to do so without raising the floor to any appreciable extent. Is there any enamel or other thin covering material suitable for this purpose?"

We advise Eubœolith patent flooring, for which Mr. J. Percy Day, of 3, Victoria Street, Westminster, is the agent.

The Parochial Hall to St. Martin's Church, Potternewton, is the first building in Leeds intended to perpetuate the memory of Queen Victoria. The ground-floor accommodation is shown by the accompanying plan; above there is an assembly-room providing accommodation for 600 persons. The cost was between £4,000 and £5,000. Mr. Percy Robinson, of Leeds, was the architect.



ST. MARTIN'S PAROCHIAL HALL, POTTERNEWTON, LEEDS.
PERCY ROBINSON, ARCHITECT.

THE GARDEN CITY

WE publish this week a plan showing the lay-out of the projected First Garden City near Letchworth, in Hertfordshire. This has been prepared by Messrs. Barry Parker & Raymond Unwin, architects, of Buxton and Baldock (contour plan by Mr. H. Howard Humphreys, M.I.C.E.). The plan is subject to modification as development proceeds. Buildings are only shown on the sections likely to be first developed, and around the main centre. The first development will take place along the Baldock Road from Letchworth (at the left-hand bottom corner), and thence by the North Road to the station on the west and the factory sites on the east.

For the central square of the town a level plateau has been chosen near the existing station. It is marked on the spot by three isolated oak trees, and lies between the contour lines which make 290 and 295 ft. above sea-level. From this plateau the ground slopes gently down on all sides, except towards Letchworth. The roads radiating from the central square, which will give ready access to all parts of the town, have been so planned that glimpses of the open country will be obtainable along them from the heart of the town, while they will afford good views of the central buildings to those approaching from the outskirts. Leading from the central square is the main avenue marked A, on each side of which streets have been planned for heavy traffic or trams; and on the island spaces thus left it is intended the main shops shall be built. The width of the roads will probably vary from 40 ft. to 60 ft., with the exception of the main avenue, which will vary from 100 ft. to 150 ft. wide. During the earlier stages of development the roads will not be made the full width, but the directors will preserve ample space for future widening and so avoid the necessity of repurchasing land for that purpose. The site for factories has been arranged adjacent to the railway on the east side of the town, where there is a large area of level land, so that direct access to the railway can be given to all factories that may require it. This area will be screened from the town by belts of trees, and the prevailing wind will carry the noise, dust or any little smoke there may be, away from the town. By planting the railway banks and cuttings with trees and shrubs, it will be possible to greatly beautify the track through the town and considerably soften the noise of the trains.

The total area shown on the plan of the town as likely to be developed is, approximately, 1,200 acres, inclusive of Norton Common and roads, and to this has to be added the land which will be used for residential developments around Letchworth Park, namely, about 100 acres. Of the above total, about 110 acres are reserved for factories, railway sidings, gasworks and similar development. So, by adding 100 acres of Letchworth Park to the above area of 1,300 acres, it will be seen that considerably over one-third of the estate will be occupied by the town and the public parks, leaving the remainder for agricultural purposes. Provision is made for a population of 30,000 persons, or about 35,000 inclusive of the villages outside the town and the population engaged in agricultural pursuits. The density of population on the area shown by the estate plan under the above scheme will be about 9 per acre, and on the town plan about 23 per acre.

Correspondence.

St. Leonard's Church, Middleton.

To the Editor of THE BUILDERS' JOURNAL.

NORWOOD, WILBRAHAM ROAD,
ALEXANDRA PARK, MANCHESTER.

SIR,—In answer to "Draughtsman," Rochdale, I have measured up the south porch at St. Leonard's Church, Middleton, but I have not published the drawing. I have however a number of copies, and if "Draughtsman" would like a copy I should be very pleased to let him have one.—Yours truly,
BASIL PENDLETON.

Churches to Measure around Cardiff.

To the Editor of THE BUILDERS' JOURNAL.

LONDON, S.W.

SIR,—About four miles from Cardiff, between Newport and Cardiff, is Peterstone Church, a small though interesting example of late Perpendicular architecture. It consists of nave, chancel, vestry, porch on north side and a lofty tower. The last is well proportioned and the door and windows contain some interesting detail, the mouldings being exceedingly good in outline. Although there is nothing so elaborate as at Llandaff or Tintern, the work would be well worth measuring for the R.I.B.A. studentship examination. I think Marshfield is the nearest railway station.—Yours truly,
W. EATON, A.R.I.B.A.

Borgund Church, Norway.

To the Editor of THE BUILDERS' JOURNAL.

EXETER.

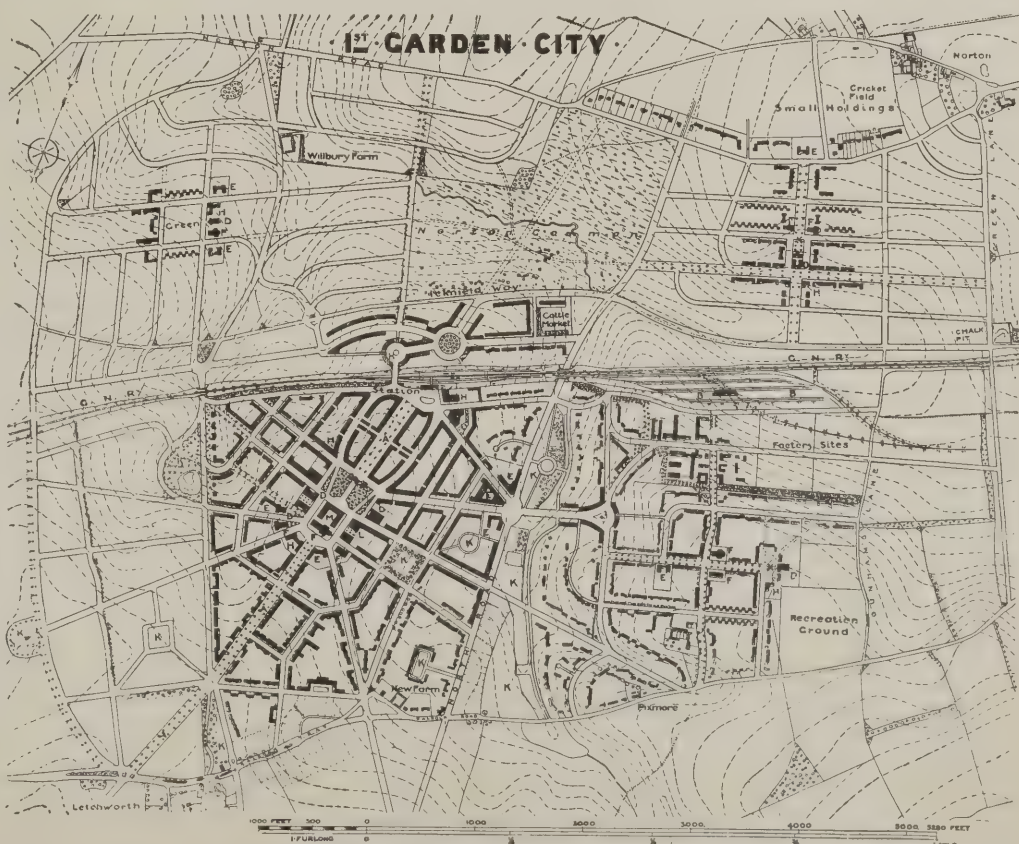
SIR,—I was glad to read that it was not the wooden church of Borgund which was recently destroyed by fire, but a later stone edifice in the immediate neighbourhood. It has been my privilege to visit both. The old wooden church is under the shadow of a hill known as Vendhellen. It has not been used for divine service for some years, but is carefully looked after by the Antiquarian Society of Christiania. Although ascribed to the early part of the twelfth century, in

my own judgment comparatively little of the original timber remains; but it has been so smothered with pitch and tar that it is hard to judge accurately. The church is a few miles from Aalesund. In appearance and possible date it is very much the same as that of Fortun, which, some years ago, had the misfortune to be acquired by the American Consul of Bergen and re-erected in his private grounds at Fjosanger, a few miles from the Norwegian port in question. Built entirely of pine, it is claimed to date from A.D. 1150, but as an actual example of early woodwork it possesses scant interest. Little, if anything, of the actual edifice remains. The triple tiers of roof, and the covered arcading surrounding the building, I have found after careful examination to have no claim whatever to antiquity. Only the two doors and some panelling seem to be mediæval work. Both the former are got out of single planks, remarkably fine ones, each about 3 ft. wide, which is wider than such boards can be obtained nowadays. Much of Fortun Church is quite new, daubed over with a treacle-like varnish, and Stephen's brown stain is also greatly in evidence.—Yours truly,
HARRY HEMS.

Obituary.

Mr. Andrew Kerr, architect and surveyor, of Greenock, died last week at the age of fifty-seven.

M. Jean Joseph Marie Anatole Marquet de Vasselot, one of the most brilliant French sculptors, died recently. He was born in Paris on June 16th, 1840, and entered the Ecole des Beaux-Arts in 1865, where he studied under Le Bourg, Jouffroy and Bonnat. M. Marquet de Vasselot was also a writer on art. His principal works are "L'Histoire du Portrait en France" (1880) "Esthétique de l'Art Industriel" (1886), and "Histoire des Sculpteurs Français de Charles VIII. à Henri III." (1888). He was created a count by Leo XIII.



A, main avenue; B, goods' station and sidings; C, central square; D, site for public hall, institute, museum, &c.; E, site for school or other educational building; F, site for place of worship; H, site for hotel; K, open spaces, greens or parks; L, site for post-office; M, site for municipal buildings.

Keystones.

"The Income Tax Burden" is the title of a pamphlet by Mr. T. Hallett Fry, F.S.S., just published by Mr. Horace Cox, Bream's Buildings, E.C., price 6d.

New Baths and Library at Sheffield for the Park Ward have been built by the Works Construction Department from the designs of the city surveyor, Mr. C. F. Wike, at a cost of £18,600.

A War Memorial.—An alabaster tablet has been placed on the south-east wall at the east end of the nave of Tadcaster Parish Church as a memorial of parishioners who fell in the late war. It has been sculptured by Mr. G. W. Milburn, of York, for Messrs. Bromet & Thorman, architects, of Tadcaster.

Kirkintilloch Town Hall.—The plans marked K have been selected. These provide for a large hall with gallery, balcony and organ recess, capable of holding 1,200 persons, and a small hall to hold 200 persons, to be also used as a court-room, and probably for the meeting of the town council. The total cost is estimated at £11,000.

The new Gaiety wants £25,000 more from the London County Council, in addition to the £50,000 it was given by the Council to build itself with. It says it could not make itself as beautiful as the Council required for £50,000, and had to spend half as much again. The Council, on the other hand, says it only wanted as much beauty as could be got for £50,000. Mr. Norman Shaw is to pronounce on the question.

The British Fire Prevention Committee's Testing Operations for the coming summer will commence to-day, when two porous brick partitions will be under investigation at the Porchester Road testing station. The work for the coming session includes the preparation of tables embodying the results of about eighty tests conducted by the Committee during the past five years, having special regard to fire-resisting floors, partitions and doors. The Committee's universal standards of fire-resistance as adopted at the recent International Fire Prevention Congress are now issued in the English, French and German languages, with British and metric measurement, classifying the fire-resistance according to temporary, partial and full protection. Arrangements will be made this session for the formation of an important reference library, the first of its kind, dealing with international literature relating to fire-protection. This matter has been placed in the hands of a special library sub-committee, to whom all offers of books, annual reports, files of technical journals, &c., should be addressed at the Committee's office, 1, Waterloo Place, London, S.W. Publication No. 81 of the Committee is a report containing reliable technical information and illustrations of the Iroquois Theatre fire at Chicago. This publication being of more general interest than the usual technical reports of the Committee, arrangements have been made that it shall be obtainable by non-members through the Committee's book agents. The price is 3s. 6d. The Committee draw attention to the exaggerated and incorrect reports relating to the Toronto fire. There were no buildings in any of the blocks of a character that would be modernly described as fire-resisting or "fireproof," nor any tall buildings of the American type. The peculiar feature of the building arrangements of the blocks destroyed was that most of the party-walls ran from north to south, thus enabling the fire to have a clean sweep through most of the structures involved. Negotiations have been proceeding between the Committee and leading Canadian architects and engineers as to the formation of a branch in Canada, and these will be completed shortly.

A new Hall at Dunblane, in connection with the cathedral, has been built from designs by Sir Rowand Anderson at a cost of £4,000.

A City Building.—At the junction of Lothbury and Old Jewry a new building has been erected for the London and Provincial Bank from designs by Mr. Arthur Blomfield at a cost of about £55,000. It is faced with Portland stone and backed with glazed white bricks.

New Municipal Buildings at Barrhead, N.B., have been erected in Main Street at an estimated cost of £5,000. The style is the later Scotch baronial, and red sandstone has been employed as the building material. Mr. James Chalmers, of 193, Hope Street, Glasgow, was the architect.

Edinburgh and Glasgow Architectural Associations.—On April 23rd members of the Edinburgh Architectural Association paid a visit to Glasgow, where they were met by about forty members of the Glasgow Architectural Association. The party inspected the leading architectural features, and in the evening a dinner was held in the Lansdowne Restaurant, the chair being taken by Mr. W. J. Blain, president of the Glasgow Association.

School Ventilation.—In the course of a discussion on school hygiene at the recent meeting of the Sanitary Institute at Cardiff Dr. E. Walford (medical officer of health) said that the examination of the air of twenty-six classrooms in the town showed the necessity of a systematic and constant chemical and bacterial examination of the air of public schools and of a more efficient control over the ventilating arrangements. A standard limit of carbon dioxide should be adopted, and a much larger amount of cubic space was required than at present provided under the Board regulations.

Manchester Society of Architects.—At the annual general meeting held on Thursday last the following officers and members of Council were elected:—President, Mr. J. W. Beaumont, F.R.I.B.A.; vice-presidents, Mr. W. A. Royle, F.R.I.B.A., and Mr. John Eaton, C.B., F.R.I.B.A.; hon. secretary and treasurer, Mr. Paul Ogden, F.R.I.B.A.; assistant hon. secretary, Mr. George Brown. *Members of Council: Fellows*, Messrs. S. H. Capper, M.A., A.R.I.B.A., R.C.A., John Ely, F.R.I.B.A., Edward Hewitt, F.R.I.B.A., Jesse Horsfall, F.R.I.B.A., A. H. Mills, A.R.I.B.A., J. D. Mould, F.R.I.B.A., Isaac Taylor, John H. Woodhouse, F.R.I.B.A., and P. S. Worthington, M.A., A.R.I.B.A.; *Associates*, A. E. Corbett, A.R.I.B.A., J. H. Gibbons, A.R.I.B.A., and Godfrey Colles.

At St. Peter's R.C. Foreign Missionary College, Freshfield, near Southport, a new wing and other buildings were recently opened. The wing is situated on the west side and comprises on the ground floor a study hall, with new cloisters on the south, east and west sides, forming a quadrangle. On the first floor is arranged a dormitory for thirty students, with prefect's room and conveniences; the spaces in the roof have been utilized for storage. Other alterations and improvements in the existing buildings have been effected. A detached building as an ironing-room with patent drying closet therein and other conveniences approached by a long covered way has also been erected in the grounds. The chapel has been re-decorated to special designs by the rector. A new high altar has been erected by Mr. A. W. Wall, of Cheltenham. The total cost is about £2,500. The heating is by Messrs. Dilworth & Carr, of Preston. The laundry drying-room fittings are by Thomas & Taylor, Ltd., of Stockport. Messrs. Formby Brothers, of Formby, were the general contractors, and Mr. Frederick H. Peate, of Liverpool, was the architect.

No. 14, Princes Gate has been acquired by Mr. J. Pierpont Morgan for £30,000. It adjoins his town house, and he contemplates making the two into one so as to provide more accommodation for his art treasures.

Change of Address.—Messrs. Charles Ower & Co., architects, civil engineers and licensed valuers, are removing from 104, Commercial Street to Virginia Buildings, 70, Seagate, Dundee. Their telephone numbers will remain as at present.

Electric Light in Country Houses.—A series of articles by Mr. R. J. Nicholson, A.I.E.E., A.M.I.E.E., on the installation of electric light in a country house is begun in "Everyday Electricity" for May (2d. monthly, 26, Cannon Street, Manchester).

Aylesford Bridge: Selected Design.—The Maidstone Town Council have selected the design of Messrs. Dodd & Dodd, of Birmingham, for the proposed new bridge at Aylesford. The cost will be £37,000. Twenty-eight sets were sent in for the premium of one hundred guineas offered.

New Schools at Hornsey.—A higher elementary school for 300 children, an ordinary elementary school for 900 children, and a centre for instruction in swimming, manual work, cookery, laundry work and housewifery, have been opened at Hornsey. The site, comprising 7,761 sq. yds., cost £7,734, the building £46,484 and the furniture £1,435.

The new Infantry Barracks at Mill Hill, which have been in course of erection for the past two years, are now almost complete. Messrs. Kirk & Randall are the contractors. The present accommodation is between 2,000 and 3,000 men (married and single); but there are yet 50 acres of land adjoining, and it is officially stated this will be used (at no very distant date) for the building of a large cavalry dépôt for training recruits to the Horse Guards.

Society of Engineers.—At a meeting held on Monday evening (Mr. D. B. Butler, president, in the chair) a "Jubilee Retrospect," being a brief history of the Society from its inception to the present time, was read by Mr. Perry F. Nursey, past-president and secretary. The Society was established in 1854, and for the first three years of its existence was called the Putney Club, having been founded by students of Putney College. In 1857 it was re-christened with its present name. At that date the membership was fifty-four; to-day it is nearly 550.

Pictures of Mediæval Rome at Earl's Court.—The well-known Roman painter, E. Roesler Franz, has been invited by the directors of Earl's Court Exhibition to lend the collection of his pictures of Mediæval Rome, a series of about eighty water-colours representing historical monuments and familiar sites which have disappeared during recent years in order to give way to the uninteresting superstructures of the modern Roman builder. The collection is to appear in one of the principal halls of the Italian Exhibition at Earl's Court, which is to be opened shortly.

The Housing Problem.—The following return shows the housing work done by the Improved Industrial Dwellings Co., the London County Council and the Peabody Trust:—

	I.I.D. Co., Ltd.	London County Council.	Peabody Trust.
Total expenditure (land and buildings)	£1,117,443	£1,261,000	£1,370,367
Cost per room (land and buildings)	£59	£131	£115
Number of dwellings	5,568	3,912	5,387
Number of rooms	18,955	9,656	11,918
Number of persons	27,600	19,628	19,138
Weekly rent per dwelling	7s. 9d.	8s. 6d.	5s. 3d.
Weekly rent per room	2s. 4d.	3s.	2s. 4d.
Death-rate per 1,000	10'3	11'8	14'4

Coming Events.

Wednesday, May 4.

SOCIETY OF ARTS.—Mr. William Pollard Digby on "Statistics of the World's Iron and Steel Industries," at 8 p.m.

BUILDERS' FOREMEN AND CLERKS OF WORKS' INSTITUTION.—Ordinary Meeting of the Members, at 8 p.m.

Thursday, May 5.

IRON AND STEEL INSTITUTE.—Annual Meeting at the Institution of Civil Engineers, at 10.30 a.m. (First day.)

SOCIETY FOR THE ENCOURAGEMENT OF THE FINE ARTS.—Dr. J. S. Phené, F.S.A., on "Anecdotes and Adventures in the search of Science and Art," at 8 p.m.

CHEMICAL SOCIETY.—Ordinary Meeting at 8 p.m.

Friday, May 6.

JUNIOR INSTITUTION OF ENGINEERS.—Mr. A. W. Young on "The Design of a Dry Dock."

ARCHITECTURAL ASSOCIATION.—Mr. A. E. Munby on "The Value of Science in an Architectural Curriculum," at 7.30 p.m.

IRON AND STEEL INSTITUTE.—Annual Meeting at Institution of Civil Engineers, at 10.30 a.m. (Second day.)

TRAMWAYS AND LIGHT RAILWAYS ASSOCIATION (at the Society of Arts).—Discussion on "Running Powers," at 8 p.m.

INCORPORATED ASSOCIATION OF MUNICIPAL AND COUNTY ENGINEERS.—Visit to Catcleugh Reservoir (Newcastle and Gateshead Waterworks).

Saturday, May 7.

EDINBURGH ARCHITECTURAL ASSOCIATION.—Visit to the Carnegie new Baths and Gymnasium, Dunfermline (Hippolyte J. Blanc, architect) and Dunfermline Abbey.

ARTISTS' BENEVOLENT INSTITUTION.—Annual Dinner at Whitehall Rooms, at 6.30 p.m.

UNIVERSITY COLLEGE, LONDON.—Prof. F. M. Simpson on "The History of Architectural Development"—III. at 11 a.m.

NORTHERN ARCHITECTURAL ASSOCIATION.—Visit to New Buildings in Dean Street, Newcastle, and the Laing Gallery.

INCORPORATED ASSOCIATION OF MUNICIPAL AND COUNTY ENGINEERS.—Northern District Meeting, Newcastle-on-Tyne.

Monday, May 9.

SOCIETY OF ARTS (Cantor Lectures).—Prof. R. Langton Douglas, M.A., on "The Majolica and Glazed Earthenware of Tuscany," at 8 p.m.

SURVEYORS' INSTITUTION.—Forth Junior Meeting at 7 p.m.

BRISTOL SOCIETY OF ARCHITECTS.—Mr. Percy Fitzgerald, M.A., F.S.A., on "Robert Adam, Artist and Architect."

INSTITUTE OF SANITARY ENGINEERS.—Meeting of Organizing Committee at 3 p.m. Examination and Literary Committee at 5 p.m., and By-Laws Committee at 6 p.m.

Tuesday, May 10.

SOCIETY OF ARTS (Applied Art Section).—Mr. William Burton on "Crystalline Glazes and their Application to the Decoration of Pottery."

Complete List of Contractions Open.

DATE OF DELIVERY	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
BUILDING:			
May 5	Great Baddow, Essex—Engine House	Chelmsford R.D.C.	J. Dewhurst, Surveyor, Avenue Chambers, Chelmsford.
" 5	Stirling—Extension of Post Office	Commissioners of H.M. Works, &c.	Secretary, H.M. Office of Works, &c., Storey's Gate, London, S.W.
" 5	Cockermouth—Three Houses	J. Huddart	J. Huddart, Crown Street, Cockermouth.
" 5	Cwmwies, near Llog, Carmarthen—Bridge	Rural District Committee	D. E. Thomas, Architect, Victoria Place, Haverfordwest.
" 5	Glyn-Neath, Wales—Eight Houses	Building Co., Ltd.	G. A. Treharne, 18 Canon Street, Aberdare.
" 5	Nottingham—Twelve Water-closets	Health Committee	F. B. Lewis, City Architect, Guildhall, Nottingham.
" 5	Portliss, Scotland—School	Ruthven School Board	D. & J. R. McMillan, 211 Union Street, Aberdeen.
" 5	Shotley Bridge—Wing, &c.	Newcastle and Gateshead Children's Holiday Assoc.	W. T. Spence, Architect, Shotley Bridge.
" 6	Bradford—Store, &c.	Co-operative Society, Ltd.	W. Rycroft, Architect, Bank Buildings, Manchester Rd., Bradford.
" 6	Aberdeen—Farmhouse	Town Council	J. Rust, City Architect, Aberdeen.
" 6	Croydon—Eighty-seven Houses	Town Council	G. F. Carter, Borough Engineer, Town Hall, Croydon.
" 6	Cwmaman, Aberdare—Hall, &c.	—	T. Roderick, Architect, Clifton Street, Aberdare.
" 6	Fintray, Scotland—Offices, &c.	—	A. Stronack, junior, & Son, 20 Belmont Street, Aberdare.
" 6	Poplar, E.—Alterations and Additions to Houses	Guardians	J. & W. Clarkson, 136 High Street, Poplar, E.
" 7	Ruthin, Wales—Alterations, &c., to Premises	—	J. Hughes, Architect, Denbigh.
" 7	Bristol—Piggeries	Visiting Committee	F. Addie, City Valuer, Council House, Bristol.
" 7	Cwmavon, Wales—Rebuilding	E. E. Bevan	J. C. Rees, Architect, Neath.
" 7	Falcarragh, Ireland—Residence	—	Doolin, Butler & Donnelly, Architects, Dawson Chambers, Dublin.
" 7	Hartlepool—Converting Premises	Trustees	T. W. Watson, Gladstone Street, Hartlepool.
" 7	Kettering—Stables, &c.	Urban District Council	Surveyor, Market Place, Kettering.
" 7	Londonderry—Stores	W. Thompson & Co., Ltd.	T. Johnston, 11 East Wall, Londonderry.
" 7	Manchester—Schools	Education Committee	Education Offices, Deansgate, Manchester.
" 7	Omagh, Ireland—Additions	—	Doolin, Butler & Donnelly, Architects, Dawson Chambers, Dublin.
" 7	Taunton—School Buildings, &c.	—	Samson & Cottam, 1 Hammet Street, Taunton.
" 7	Biggleswade—Enlargement of Hospital	Joint Hospital Board	H. Young, Architect, Maitland Street, Maitland Road, Bedford.
" 7	Bandon—Fifty-seven Cottages	Rural District Council	A. Haynes, Clerk, Council Room, Workhouse, Bandon.
" 8	Newtownstewart, Ireland—Belfry, &c.	Rev. W. T. O'Doherty	E. J. Toye, 20 Great James Street, Londonderry.
" 9	Boston—Cattle Shed, &c.	Corporation	G. E. Clarke, Borough Surveyor, Boston.
" 9	Ballycroy, co. Mayo—Schoolhouse	—	F. W. D. Mitchell, 28 Rutland Square, Dublin.
" 9	Hodge Hill, Carmel Fell—Farm Buildings	M. Higginbirket	G. L. Hoggarth, Architect, Kendal.
" 9	Tillcountry, Scotland—Additions, &c., to School	School Board	J. Melvin & Son, Architects, Alloa.
" 9	Waterford, Ireland—Hospital	Newtown School	J. M'Mulley, 30 South Mall, Cork.
" 9	Westwood—Additions to Store	—	Secretary, Blaydon Co-operative Society, Westwood.
" 9	Kingston-upon-Thames—Mortuary	Corporation	Borough Surveyor, Kingston-upon-Thames.
" 9	Southall—Library	Southall-Norwood U.D.C.	R. Brown, Architect, Public Offices, Southall.
" 10	Bramford, near Ipswich—Abutments	East Suffolk County Council	H. Miller, County Surveyor, Bramford, near Ipswich.
" 10	Bray, Ireland—Forty-four Cottages	Urban District Council	C. H. M. Sutter, Architect, Bray, Ireland.
" 10	Pontshonnorton, Wales—Vestry	—	A. O. Evans, Architect, Pontypriid.
" 10	Purton, Wilts—Cottage	Great Western Railway Co.	G. K. Mills, Secretary, Paddington Station, London.
" 10	Winscombe, Somerset—Station Buildings	Great Western Railway Co.	G. K. Mills, Secretary, Paddington Station, London.
" 10	Pontnewydd—Twenty Houses	Building Club	J. Russell, Richmond Road, Pontnewydd.
" 10	Ballinrobe—Premises	—	J. Ritchie, Architect, Ballinrobe.
" 11	Mardy—Hall	Highway Committee	E. Williams, Architect, Andrew's Buildings, Cardiff.
" 11	Blackpool—Shelters	Mr. Berriman	J. S. Brodie, Borough Surveyor, Town Hall, Blackpool.
" 11	Gurnard's Head, Cornwall—Farmhouse	Guardians	O. Caldwell, Architect, Penzance.
" 11	Lambeth—Alterations at Dispensary	—	W. Thurnall, Guardians Office, Brook Street, Kennington Rd., S.E.
" 12	Tannochside, Scotland—Building	District Committee	Crouch & Hogg, 63 Bothwell Street, Glasgow.
" 12	Liverpool—Sorting Office	Commissioners of H.M. Works, &c.	Mr. Cropper, H.M. Office of Works, Liverpool.
" 13	Rotherham—Hospital, &c.	Corporation	J. Platts, County Borough Architect, High Street, Rotherham.
" 14	Totland Bay, Isle of Wight—Enlargement and Alterations of Church	Corporation	Mayston & Eddison, 7 Great James Street, Bedford Row, W.C.
" 16	Sutton Coldfield—Town Hall and Fire Station	—	P. Stone, Architect, Newport, Isle of Wight.
" 16	Wetheral, Cumberland—Offices	Parish Council	J. H. Martindale, Architect, Viaduct Chambers, Carlisle.
" 16	Shrewsbury—Additions, &c.	—	W. C. Eddowes, Borough Surveyor, The Square, Shrewsbury.
" 17	Hayle—Farm Buildings	—	S. Lawrey, Helnoweth, Gulval, Penzance.
ENGINEERING:			
May 5	London, S.E.—Steam Roller Wheels	Camberwell Borough Council	W. Oxtoby, Borough Engineer, Town Hall, Camberwell, S.E.
" 5	Stansted—Pump	Parish Council	E. T. Watts, Surveyor, Thorley, Bishop's Stortford.
" 5	Swansea—Hydraulic Accumulator, Cranes, &c. (two contracts).	Harbour Trustees	A. O. Schenk, Engineer, Harbour Offices, Swansea.
" 6	Broadstairs—Gasholder	Ash-next-Sandwich Gas Co.	F. Higginson, Engineer, Gas Office, Alexandra Road, Broadstairs.
" 7	Egremont, Cheshire—Electric Plant	Urban District Council	J. A. Crowther, Engineer, Seaview Road, Liscard, Cheshire.
" 7	London, E.—Electric Plant	Poplar Borough Council	P. N. Hooper, Borough Electrical Engineer, Electricity Works, Glaucus Street, Bromley-by-Bow.
" 9	Ilford—Bridge Widening	Urban District Council	H. Shaw, Surveyor, Town Hall, Ilford.
" 9	Belfast—Penstock Doors	Harbour Commissioners	G. F. L. Giles, Harbour Engineer, Belfast.
" 9	Glasgow—Switchboards	Corporation	W. A. Chamen, 75 Waterloo Street, Glasgow.
" 9	Dublin—Electric Plant	Lighting Committee	S. Harty, City Engineer, City Hall, Dublin.
" 9	Edinburgh—Gas Plant, &c.	Corporation	W. R. Herring, Chief Engineer, New Street Works, Edinburgh.
" 9	St. Clement, Cornwall—Filter Beds, &c.	Truro Water Co.	J. Mansergh & Sons, 5 Victoria Street, Westminster.
" 9	Natal, South Africa—Electric Telferage	Government	Sir Walter Peace, 26 Victoria Street, London, S.W.
" 9	Wesham, Lancs—Warming and Hot-water Supply	Foye Union Guardians	Hayward & Harrison, Architects, Accrington.
" 10	Southampton—Road Roller, &c.	Corporation	Borough Engineer, 123 High Street.
" 12	Writtle, Essex—Waterworks	Rural District Council	J. Taylor, Sons & S. Crimp, 27 Great George Street, Westminster.
" 13	Wiveliscombe Somerset—Waterworks	Urban District Council	T. V. Pearce, Clerk, Wiveliscombe.
" 14	Burslem—Electric Plant	Corporation	A. Bremner, Borough Electrical Engineer, Market Bldgs., Burslem.
" 14	Gills Haven, Caithness, N.B.—Pier	County Council	E. K. Carmichael, 8 North Bank Street, Edinburgh.
" 16	Neath, Wales—Electric Mains	Corporation	D. M. Jenkins, Borough Engineer, Gwyn Hall, Neath.
" 16	Salford—Cars	Tramway Committee	E. Hatton, 32 Blackfriars Street, Salford.
" 17	Devonport—Water-Gas Plant	Corporation	Stevenson & Bursall, 38 Parliament Street, Westminster.
" 17	Leavesden, near Watford—Engineering Revisions, &c.	Metropolitan Asylums Board	W. T. Hatch, Engineer-in-Chief, Board's Offices, Embankment, E.C.
" 17	Kilmarnock—Electric Plant	Corporation	Kennedy & Jenkin, 17 Victoria Street, Westminster, S.W.
" 17	London, S.E.—Switchgear	London County Council	Tramway Offices, 303 Camberwell New Road, S.E.
" 18	London, W.—Electric Plant	Hammersmith Borough Council	G. G. Bell, 57 Fulham Palace Road, W.
" 20	Ayr, Scotland—Electric Plant	District Lunacy Board	W. M. Stewart, 55 West Regent Street, Glasgow.
" 23	Glasgow—Electric Wharf Cranes	Trustees	G. H. Baxter, 16 Robertson Street, Glasgow.
" 24	London, N.—Pumping Machinery, &c.	Tottenham and Wood Green Joint Drainage Committee	W. H. Prescott, 712 High Road, Tottenham.

Complete List of Contracts Open—continued.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
ENGINEERING—cont.			
May 24	Abergavenny—Electric Lighting Schemes	Asylum Building Committee ..	J. Glendinning, Medical Superintendent, Abergavenny.
" 25	Manchester—Electric Cranes	Dock and Warehouse Extension Co., Ltd.	W. H. Hunter, 41 Spring Gardens, Manchester.
" 26	London, N.E.—Electricity Supply Mains.. .. .	Hackney Borough Council ..	R. Hammond, 64 Victoria Street, Westminster, S.W.
IRON AND STEEL			
May 6	Felixstowe—Pipes	Urban District Council ..	H. Clegg, Surveyor, Town Hall, Felixstowe.
" 7	Tynemouth—Materials	Corporation	H. Clarke, Secretary, Town Hall, Tynemouth.
" 9	Llanelli—Pipes	Urban District Council ..	G. Watkeys, Town Hall, Llanelli.
" 9	Derby—Pipes	Waterworks Committee ..	J. Ward, Borough Surveyor, Babington Lane, Derby.
" 9	Egremont, Cheshire—Stores.. .. .	Wallasey U.D.C.	Manager, Egremont Ferry, Cheshire.
" 10	Warrington—Sanitary Pails	Sanitary Works Committee ..	Cleansing Superintendent, Central Sanitary Depot, Howley, Warrington.
" 10	Richmond, Surrey—Railway Stores	Main Sewerage Board	W. Fairley, Engineer, West Hill Road, Kew Gardens, S.W.
" 10	London, W.—Steel, &c.	Great Western Railway Co. ..	Engineer, Paddington Station, London.
PAINTING AND PLUMBING:			
May 6	Dartmouth—Paint, &c.	Totnes Port Sanitary Authority	S. J. Pope, Clerk, Duke Street, Dartmouth.
" 6	Dewsbury—Painting at Market	Baths and Markets Committee..	Borough Surveyor, Town Hall, Dewsbury.
" 6	Leeds—Painting, &c., at Baths	City Engineer, Leeds.	
" 7	Bolton, Lancs—Painting, &c., at Fire Station	Watch Committee	E. L. Morgan, Borough Engineer, Town Hall, Bolton.
" 9	Egremont, Cheshire—Paints	Wallasey U.D.C.	Manager, Egremont Ferry, Cheshire.
" 16	St. Marylebone—Painting, &c.	Guardians	H. T. Dudman, Clerk, Guardians' Offices, Northumberland Street, Marylebone Road, W.
" 18	London, S.W.—Painting, &c.	Guardians	W. H. Chappell, Clerk, St. George's, Hanover Square Hall, Mount Street, W.
ROADS AND CARTAGE:			
May 5	Andover—Materials	Rural District Council	J. Wormald, District Surveyor, Andover.
" 5	London, S.E.—Road Rollers.. .. .	Camberwell Borough Council ..	W. Oxtoby, Borough Engineer, Town Hall, Camberwell, S.E.
" 5	Huddersfield—Street Works (two contracts)	Corporation	Borough Surveyor, 1 Peel Street, Huddersfield.
" 5	London, S.W.—Paving Works	Westminster City Council ..	Works Dept., Westminster City Hall, Charing Cross Road, W.C.
" 5	Sudbury, Suffolk—Granite, &c.	Rural District Council	W. Carver, 3 Melford Road, Sudbury, Suffolk.
" 6	Felixstowe—Materials.. .. .	Urban District Council	H. Clegg, Surveyor, Town Hall, Felixstowe.
" 7	Aghalee, Ireland—Materials, &c.	Rural District Council	County Surveyor, County Court House, Belfast.
" 7	Bootle, Lancs—Granite Paving Materials	Borough Surveyor, Town Hall, Bootle.	
" 9	Chelmsford—Making-up	H. G. Warne, Surveyor, Avenue Chambers, Chelmsford.	
" 9	Church, Lancs—Materials	Urban District Council	W. E. Wood, Surveyor, Church.
" 9	Crewe—Street-making	Town Council	G. E. Shore, Borough Surveyor, Heath Street, Crewe.
" 9	Hale, Cheshire—Making-up	Urban District Council	T. Blagburn, Council's Surveyor, Hale, Cheshire.
" 9	London, S.E.—Kerbing, &c.	Lewisham Borough Council ..	Surveyor, Town Hall, Catford.
" 9	Romford—Granite	Rural District Council	G. Lapwood, Highway Surveyor, Victoria Chambers, Romford.
" 9	Hanwell, W—Making-up Streets	Urban District Council	S. W. Barnes, Surveyor, Hanwell.
" 10	West Ham—Making-up Street	Borough Council	J. G. Morley, Borough Engineer, Town Hall, West Ham, E.
" 10	Ashford, Kent—Granite	Rural District Council	A. Sims, Surveyor, Charing.
" 10	Billinge, near Wigan—Kerbs, &c.	Urban District Council	A. Darlington, Council Offices, Billinge, near Wigan.
" 10	Faversham—Granite	Rural District Council	J. G. Chittenden, District Surveyor, Ashford Road, Faversham.
" 16	Stamford—Road making	Corporation.. .. .	F. R. Ryman, 8 St. Mary's Street, Stamford.
SANITARY:			
May 5	Kettering—Drainage Works	Urban District Council	T. R. Smith, Engineer, Market Place, Kettering.
" 9	Llanelli—Sewerage Works	Urban District Council	G. Watkeys, Town Hall, Llanelli.
" 10	Brentwood, Essex—Sewers, &c.	Urban District Council	Messrs. Jones, Parliament Mansions, Victoria St., Westminster, S.W.
" 12	Lichfield—Sewerage Works	Rural District Council	C. O. Rawstron, 20 Walsall Road, Lichfield.
" 13	Bexley, Kent—Sewer, &c.	Urban District Council	A. Williams & Son, 14 Victoria Street, Westminster, S.W.
" 14	Droitwich—Sewage Outfall Works, &c.	Corporation.. .. .	H. Hulse, Borough Engineer Droitwich.
TIMBER:			
May 6	Felixstowe—Timber	Urban District Council	H. Clegg, Surveyor, Town Hall, Felixstowe.
" 7	Tynemouth—Timber	Corporation.. .. .	H. Clarke, Secretary, Town Hall, Tynemouth.
" 9	Egremont, Cheshire—Timber	Wallasey U.D.C.	Manager, Egremont Ferry, Cheshire.

List of Competitions Open.

DATE OF DELIVERY.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	DEPOSIT REQUIRED FOR CONDITIONS, &c.	BY WHOM ADVERTISED.
May 9	Barnet—Hospital	—	—	C. D. Byfield, 16 High Street, Barnet.
" 16	Dungarvan, Ireland—Water-supply Scheme	—	—	T. McCarthy, Town Clerk, U.D.C. Office, Dungarvan.
" 31	Stanford, Lincs—Public Library	£25, £15, £10.	£1 is.	C. Atter, Town Clerk, Town Hall, Stamford.
" 31	New Somerby, Grantham—Church	£10	—	Rev. H. H. Surgey, Dudley Road, Grantham.
" 31	Grantham—Church	£10.	—	H. H. Surgey, Dudley Road, Grantham.

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Bankruptcies.

[Abbreviations: R.O.—receiving order; P.E.—public examination; C.C.—county court; O.R.—official receiver; Ad.—Adjudication.]

DURING THE WEEK ending April 29th thirty-three failures in the building and timber trades in England and Wales were gazetted.

CARTER & ELLIS, builders, Plaistow. Adj. April 19th.
W. TURNBULL, builder, Horley. Adj. April 16th.
W. TERRY, builder, Basingstoke. R.O. April 23rd.
E. J. BIRCH, builder, Birmingham. R.O. April 22nd.
C. E. HOWORTH, builder and contractor, Birkdale. Gross liabilities £5,641; £1,000 to rank for dividend.
R. DAWN, builder, Shildon. First meeting, Talbot Hotel, Bishop Auckland, May 4th, at 11.30.
J. D. CORKE, builder and contractor, Rochester. R.O. April 18th.
J. HURST, builder and contractor, Wigan. First meeting, Wigan C.C., May 5th, at 10. P.E., same, at 10.45.
R. PARKER & Co. (J. C. JOHNSON & H. S. LAIRD), timber merchants, Liverpool. Adj. April 21st.
M. JOWETT, builder and contractor, North Shields. R.O. April 19th. P.E., Newcastle C.C., May 12th, at 11.
J. WHITFIELD, builder and slater, Leeds. P.E., Leeds C.C., May 10th, at 11.
R. WHITFIELD, builder and slater, Leeds. P.E., Leeds C.C., May 10th, at 11.
T. J. JUKES, builder, Freemantle, Southampton. Discharge granted.
J. HINE, timber merchant, Ludlow. R.O. April 20th. First meeting, 4, Corn Square, Leominster, May 9th, at 10. P.E., Leominster Town Hall, same day, at 10.30.
J. LAWRENCE, junr., builder, Ipswich. R.O. April 18th. First meeting, O.R.'s, Ipswich, May 4th, at 11. P.E., Ipswich Shirehall, May 20th, at 10.30.
C. B. ROBERTS & Co., builders and contractors, Tooting and Redhill. Adj. April 22nd.
H. C. HUMPHREY, timber and slate merchant, Birmingham. First meeting, 174, Corporation Street, Birmingham, May 4th, at 11. P.E., Birmingham C.C., June 9th, at 2.
C. L. SIMONS, builder, Hull and Shipley. R.O. April 18th. First meeting, O.R.'s, Bradford, May 6th, at 2.30. P.E., Bradford C.C., May 11th, at 10.
W. W. FREEMAN, builder and contractor, Chester. Liabilities expected to rank £12,818; assets £433; deficiency £12,385.
W. HOWELL & SON, builders, Gowerton. First meeting, O.R.'s, Swansea, May 5th, at 12. P.E., Swansea Town Hall, May 13th, at 11.30.

Tenders.

Information from accredited sources should be sent to "The Editor" at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Aldershot.—For new works, offices and stokers' lobby at Ash Road Gasworks, for the Aldershot Gas and Water Co. Mr. T. Davison, architect, 28, Great Ormond Street, W.C.:—

W. H. Pullinger	£2,442	4	4
W. L. Edgoose	2,439	14	6
Bateman & Son	2,342	8	6
Musellwhite & Sapp	2,048	0	0
G. Kemp	1,843	0	0
Martin, Wells & Co.,* Aldershot ..	1,809	0	0

* Accepted.

Bristol.—For the erection of schools, &c., Air Balloon Hill, St. George, for the Education Committee. Messrs. La Trobe & Weston, architects, 20, Clare Street, Bristol:—

W. & J. Bennett	£13,450	0	0
H. A. Forse & Son	12,895	0	0
G. Humphreys & Son	12,890	0	0
R. Wilkins & Son	12,549	0	0
E. Walters	12,070	0	0
E. Love	12,035	0	0
E. Clarke,* Fishponds	11,317	0	0
A. E. Wilkins* (plumbing)	1,106	1	6

* Accepted.

Drogheda (Ireland).—For the erection of a public library, for the Public Library Committee:—

J. P. Pile	£2,850		
G. W. Scott, Dublin	2,830		
T. A. Mellor	2,650		
T. Creaser	2,180		
S. Roche	2,050		
M. McCann	1,945		
F. Gogarty*	1,925		

* Accepted.

[Rest of Drogheda.]

Gilwern (near Abergavenny).—For the erection of a rectory house at Gilwern, for Rev. G. Roberts. Mr. F. Baldwin, architect, Abergavenny. Quantities by the architect:—

J. T. Morgan & Son	£2,486	0	0
J. G. Thomas & Sons	2,480	0	0
T. S. Foster	2,390	0	0
C. Cooke	2,360	0	0
Leadbeter Brothers	2,329	0	0
J. E. Williams	2,280	0	0
R. Edwards,* Tredegar	2,274	10	0

* Reduced by modification to £2,259 10s., and accepted.

Gillingham (Kent).—For the erection of thirty cottages in St. George's Road, Gillingham. Mr. Ernest J.

Hammond, C.E., M.S.A., architect, 21, Balmoral Road, Gillingham:—

W. G. Hogg, Chatham	£7,500	0	0
J. A. Davison, West Malling	6,750	0	0
G. Jones, Herne Bay	6,690	0	0
W. W. Hammond, Gillingham	6,375	0	0
H. J. Galer, Leigh-on-Sea	6,172	10	0
A. G. Candler	6,060	0	0
A. S. Ingleton, Herne Bay	6,000	0	0
C. J. Bragg, East Ham, E.	5,512	0	0
White & Co., Wallington	5,490	0	0
H. F. Caspall, Dover	5,370	0	0
J. Wilford,* Snodland, nr. Rochester ..	5,370	0	0
S. Hollett, Garlinge	4,800	0	0

* Accepted.

High Wycombe.—For sewer-leakage prevention and surface-water drainage works, for the Corporation. Mr. J. T. Rushbrooke, borough surveyor:—

T. Watson, junr., Southall	£19,603	15	9
O. G. Osenton, Reading	12,100	0	0
T. Free & Sons, Maidenhead	9,687	19	0
T. & J. Burgoyne, Lowestoft	7,761	15	10
W. Lee & Son, High Wycombe	7,750	0	0
J. Jackson, Forest Gate, E.	7,618	5	3
T. Adams, Wood Green, N.	7,410	0	0

Case Sea Defence Syndicate,*

High Holborn 7,322 0 0

T. H. McDonald,† Talgarth, Brecon 6,188 13 0

* Accepted. † Withdrawn.

Ipswich.—For rebuilding public-house at Ipswich, for Messrs. Steward & Pattenon, Ltd. Messrs. Morgan & Buckingham, architects, 3, Redwell Street, Norwich. Quantities by architects:—

E. Catchpole	£1,225		
F. Bennett	1,220		
W. Grayston	1,218		
C. Borrett*	1,195		

* Accepted. [All of Ipswich.]

Ipswich.—For the erection of new bakery and stables, for the Ipswich Industrial Co-operative Society, Ltd. F. E. S. Harris, A.R.I.B.A., architect, 1, Balloon Street, Manchester:—

West Chelmsford	£5,543		
G. A. Kenney	5,390		
Scales & Robinson, Cambridge	5,350		
Catchpole	5,317		
Grayston	5,248		
Linzell	5,237		
S. Kenney	5,190		
Sadler	5,190		
W. Death	5,139		
Skerrett	5,050		
Parkington	5,000		
Roper	4,935		
Grimwood	4,873		
Co-operative Builders,* Kettering	4,167		

* Accepted. [Rest of Ipswich.]

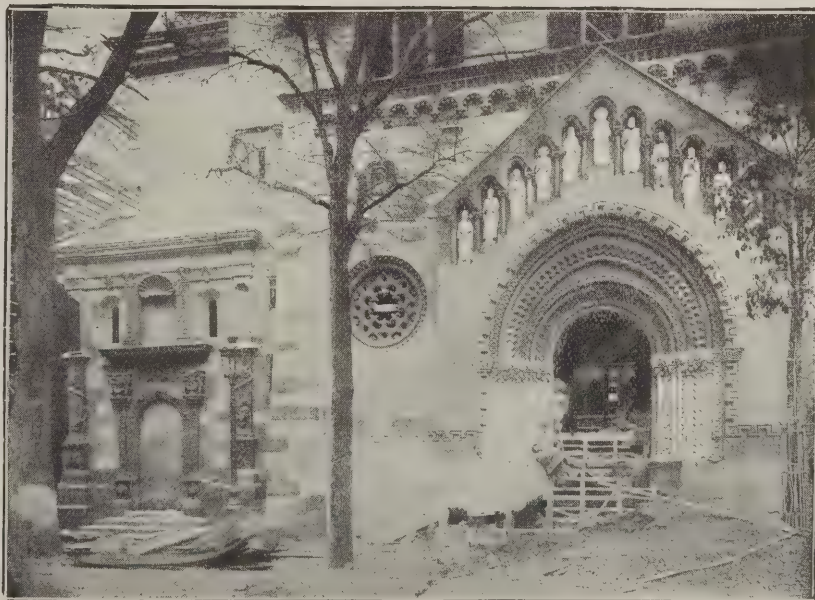
(Continued on p. xviii.)

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CARPENTER and JOINER, of good practical experience in the building trade, seeks position as Foreman in joiner's shop or as Clerk of Works. Excellent qualifications and references.—Apply D. K., 61, Mysore Road, Lavender Hill, London, S.W. 326

ARCHITECT and SURVEYOR'S Assistant desires engagement. Nine years' varied experience in good office, competent draughtsman, designer and quantity surveyor. Moderate salary—temporary or permanent.—BETA, 73, Queen's Walk, Nottingham. 320

ARCHITECT and SURVEYOR'S ASSISTANT desires RE-ENGAGEMENT. Isolation hospital work, working drawings, details, quantities, surveys, &c. Good testimonials. Moderate salary.—Box 351, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

ARCHITECT and SURVEYOR (33) having small Practice near London desires engagement with view to partnership and amalgamation of own practice. Good offices in rising town.—Apply Box 316, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

ARCHITECT and SURVEYOR'S JUNIOR desires engagement. Articled to well-known F.R.I.B.A. Neat draughtsman. Good references.—SPURGEON, Havant. 327

ARCHITECT and SURVEYOR, young, experienced, desires engagement as Managing Assistant with view to partnership with old-established firm—capable in all branches.—Box 314, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

ARCHITECT'S ASSISTANT, good experience, requires ENGAGEMENT; contract drawings, details, surveying, assistance with quantities, &c.—Box 347, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

ARCHITECT'S good all-round Assistant disengaged, well up in Board School design and quantities.—Box 313, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

ARCHITECT has TIME to ASSIST others with working drawings, details, specifications, and quantities. Special terms for competitions. Good general experience.—WM. S. WILSON, Mount Pleasant Road, Tottenham. 348

ARCHITECT'S IMPROVER or JUNIOR ASSISTANT (19), Prob. R.I.B.A., neat, accurate draughtsman, London experience, excellent references.—Box 350, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

ARCHITECT'S JUNIOR ASSISTANT disengaged. Neat and accurate draughtsman. Well up in surveying, levelling, and knowledge of quantities. Excellent references.—N. H., 7, Goldsmith Road, Leyton. 325

ARCHITECT'S JUNIOR ASSISTANT (20), just completed five years' in A.R.I.B.A.'s office, desires engagement, good reference.—G. H., 12, Cliff Terrace, Hornsea. 340

ARCHITECT'S JUNIOR ASSISTANT desires re-engagement (age 22), 7½ years' country experience, working drawings, details, perspectives, neat draughtsman, good knowledge of quantities.—F. PRICE, 2, Farfields, Dorey, Stafford. 342

ASSISTANT (Architect's and Surveyor's) DISENGAGED. Working and detail drawings, specifications, quantities, surveying, and levelling. Excellent references.—Apply HOLLINGWORTH, Dry Sandford, Abingdon. 345

BRICKLAYER (27), Energetic, Abstainer, seeks job, town or country. No reasonable offer refused.—A. G., 22, Uamvac Street, Poplar, E. 363

BRICKWORK, Pointing and Gauge Work wanted by experienced man. Contract or Speculation. Good reference.—X. Y. Z., 133, Derby Road, Seven Kings, Ilford. 370

BUILDER'S ASSISTANT. Ten years' experience. Abstracing and billing up quantities. Contract and jobbing, prime costs, accounts, checking invoices, ledgers, and all other office routine, also several years of outside supervision. Excellent references. Age 27.—FRANCIS, 2, Kennington Park Road. 366

CARPENTER and JOINER (Good), Factory, Estate, or otherwise.—W. W., 19, Brunswick Avenue, New Southgate, N. 364

CLERK OF WORKS desires a SITUATION. Age 46, married. Has been employed for some years on the Welbeck Estate, and is highly recommended by the Duke of Portland.—Apply THOMAS H. PENNINGTON, Ford Ville, Carlton Road, Worksop, Notts; or to Mr. WARNER TURNER, Agent, Welbeck, Worksop, Notts. 312

CLERK OF WORKS, disengaged, experienced, practical, good draughtsman, quantities. Just completed 3 years' erection of 1st class church. Age 35. Good references.—Box 324, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

DRAUGHTSMAN & GENERAL CLERK (20), disengaged; two years' architectural experience; gentlemanly and of good appearance; salary small.—Box 317, BUILDERS' JOURNAL Office, 6 Great New Street, Fetter Lane, E.C.

ESTATE AGENTS, ARCHITECTS, SURVEYORS. Smart, energetic, businesslike young man desires change. Drawings, survey and level, specifications and quantities, well up in speculative building and estate work.—Box 339, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

ESTATE or BUILDER'S MANAGER (34), thoroughly efficient in all branches, outdoor or in. Good references. Moderate salary.—H. JAMES, Midgham, Reading. 341

FOREMAN JOINER, young, disengaged, well up in architecture. Certified reference; been master man.—Address Box 356, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

FOREMAN MASON FIXER seeks RE-ENGAGEMENT. Quick and reliable. Good references.—Address A. E. J., 148, Battersea Park Road, S.W. 343

GENERAL FOREMAN seeks RE-ENGAGEMENT. Good manager of men. Bricklayer by trade. Good references from last and previous employers.—Address A. G., 58, Strone Road, Forest Gate, E. 349

GENERAL FOREMAN (39) seeks EN- GAGEMENT. New or alteration works. Practical and energetic. Good manager. Carpenter and joiner. Abstainer. Long references.—F. E., Homestead, Cromwell Road, Hounslow, Middlesex. 346

GENERAL FOREMAN SEEKS RE-ENGAGEMENT; used to jobs at competitive prices; just finished large contract.—Box 361, BUILDERS' JOURNAL Office 6, Great New Street, Fetter Lane, E.C.

GENERAL FOREMAN, 40, seeks RE-ENGAGEMENT, 2½ years with last employer. Trade, bricklayer; good knowledge of all branches.—Address 46, Colchester Road, Walthamstow, Essex. 371

GENERAL FOREMAN (41) seeks Re- engagement. Trade, carpenter. Town or country, latter preferred. Good references for both town and country work.—J. T. S., 6, Portobello Road, Notting Hill. 363

JOINER (good), wants JOB, 8 years' experience, age 23, suit small Builder, well up in stairs and fixing.—V. R., 2, Eve Rd., South Tottenham. 367

MACHINIST (27), wants job, over and under saw bench, any planers, fourcutter; improver on spindle. Had charge small plant; town or country, 8½d.—MACHINIST, 28, Blackhorse Road, Walthamstow. 310

MACHINIST wants SITUATION.—Spindle tenoner, planer, saws, &c. Used to quick joinery trade. Attend gas engine. Good references, wages, 8d. per hour.—Write C. M., 37, Frensham Road, Fratton, Hants. 332

PLUMBER, GAS and HOT WATER FITTER, wants JOB. New work or jobbing day or piece; 11 years' experience. Distance no object.—T. C., 89, Roman Road, Barnsbury, N. 358

PROFESSIONAL ASSOCIATE OF THE SURVEYORS' INSTITUTION requires engagement as Surveyor or Assistant Engineer. Five years' experience in land agent and surveyor's office, and five years' under engineer of sewage works. Well up in land surveying and levelling, mathematics and applied mechanics.—Box 333, BUILDERS' JOURNAL Office, 6, Great New Street, E.C.

SPECULATIVE BUILDERS and PROPERTY OWNERS. Painting, &c., wanted, large or small quantities. Best materials only used. Distance no object.—REYNOLDS, 9, Woodside Avenue, South Norwood. 337

STAINED GLASS, Mosaics, Leaded Lights, Decoration and Figure and Ornamental Designer, and Cartoonist.—E. S. W., 43, Ranelagh Road, Ealing, London, W. 369

TO ARCHITECTS.—Quantities taken out accurately. Midland and Northern practice. Small percentage.—SURVEYOR, Box 362, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

TO CONSTRUCTIONAL ENGINEERS and BUILDERS.—Wanted by Mechanical Engineer of long standing, the ERECTION of all kinds of iron work, roofs, columns, and girders, fireproof floors, bridge work, &c. Either superintend or quote price.—J. H. W., 1, Grenard Road, Peckham, S.E. 338

TO W.D. or ADMIRALTY CONTRACTORS.—GENERAL FOREMAN requires SITUATION. Well up in schedule. Four years in charge of specials, measure and abstract. Abstainer; age 27.—H. C., 9, Page's Lane, Muswell Hill, Hornsey, N. 357

WORKING FOREMAN of CARPENTERS seeks ENGAGEMENT. Well up in all branches. Used to pushing jobs. Town or country. Age 45. Good references.—A. M. F., 38a, Edenvale Street, Fulham, S.W. 365

Appointments Vacant.

BUILDER'S CLERK.—Must have experience of general routine of builder's office, be capable of taking off quantities, measuring up work, etc. Particulars of experience, age, and salary required to J. ROTHWELL & SONS, Builders and Contractors, St. Helens, Lancs.

CLERK WANTED for Contractor's office. Must be well up in builders' book-keeping and accounts; send reference from last employer, also state age and salary required.—Apply WALL & HOOK, Builders and Contractors, Brimcombe, Gloucestershire.

DESIGNER OF METAL WORK, chiefly Electric Light Fittings. WANTED JUNIOR about 20 years of age. Give qualifications and salary required to GEORGE WRAGGE, Ltd., Wardry Art Metal Works, Manchester.

IMPROVER WANTED in Architect's Office for few months; good opening for educated youth.—Box 356, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

JUNIOR ASSISTANT WANTED, about 25, of artistic temperament, to interview Architects, with good knowledge of Metal Work, Window Casements and Leaded Glazing; at the London Showroom of GEORGE WRAGGE, Ltd., Salford, Manchester, and 211, Shaftesbury Avenue, W.C. State qualifications and salary.

MACHINIST.—WANTED a good IMPROVER with knowledge of deal frame preferred, state fullest particulars of experience with machines, wages, &c., to D. READ, Works Department, Guy's Hospital, S.E.

PUPIL.—An Architect and Surveyor has a VACANCY in busy City office for a well-educated youth as articulated pupil—Apply "Architect," care of BURBRIDGE & Co., 63, Moorgate Street, E.C.

TO PARENTS and GUARDIANS.—Civil Engineer and Architect in good class, busy practice at Leeds, has vacancy for well-educated youth as pupil; must have talent for drawing. Four years' articles. Premium 100 guineas.—Address, L. HARRIS, 45, Albion Street, Leeds.

Miscellaneous.

LIFTS.—WM. AUG'S GIBSON, LTD., formerly President of American Elevator Co., later Managing Director Otis Elevator Co., Ltd. Temple Bar House, 28, Fleet Street, London, E.C.

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WIRE NAILS, Mixed, 8s. per cwt.; 28 lbs., 2s. 3d.; Screws, mixed, 23s. per cwt.; 28 lbs., 7s. 6d.; wire, cut, wrought and malleable nails, tacks, shoe nails, rivets, &c., wholesale prices.—MIDLAND NAIL WORKS. 25 and 26, Rea Street, Birmingham. (John Pyne, Proprietor.)

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R.I.B.A. EXAMS.—Personal and Correspondence tuition; courses of any duration. Apply for syllabus to Mr. A. G. BOND, B.A. Oxon., A.R.I.B.A., 115, Gower Street, London, W.C. (late Howgate and Bond).

STRUCTURAL STEELWORK

Correspondence Classes specially for Architects, Assistants, Surveyors, Builders, and Draughtsmen, are held by the Midland Engineering Bureau, Strand, Derby. Specialists in American and Continental Construction. Thorough Tuition. Send for descriptive booklet J. (1904), and read opinions of past students.

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The next qualifying Examination for membership will be held in OCTOBER, 1904.

C. McARTHUR BUTLER,
Secretary.

THE ARCHITECTURAL ASSOCIATION.

May 6th. Ordinary General Meeting at No. 9, Conduit Street, W., at 7.30 p.m. Paper by Mr. A. E. Munby, M.A., F.C.S., entitled "The Value of Science in an Architectural Curriculum," illustrated by practical experiments. Election of Officers for Session 1904-1905.

May 14th. First Summer Visit to Moor Park, Rickmansworth, by kind permission of Lord Ebury. Members desirous of joining the party, which is limited to 30, should forward a P.O. for 2/6 to the Secretary, at 48, Tulton Street, S.W., for the Return Railway Ticket, on or before Wednesday, May 11th. Train leaves Baker Street Station (Metropolitan Railway) at 2.20 p.m. Members to meet at Baker Street Booking Office (St. John's Wood Line) at 2 p.m.

LOUIS AMBLER } Hon. Secs
HENRY TANNER, Jr. }

650,000 MORE MEN WANTED.

650,000 students have enrolled with us in 12 years, and over 14,000 are enrolling each month. We give instruction in 152 distinct courses: Architecture and Architectural Drawing, Building and Contracting, Electrical, Mechanical, Steam, Civil, Sanitary, and Mining Engineering, &c. Ours are the largest technical schools in the world, and we are the originators of instruction by correspondence. You have no books to buy. Only spare time study required to greatly increase your earning capacity. Moderate terms. Easy monthly payments. We have helped thousands to succeed. Write TO-DAY, stating what course interests you, to—BRITISH AGENCY, INTERNATIONAL CORRESPONDENCE SCHOOLS, 57 & 58, Chancery Lane, London, W.C.

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STAINED GLASS.—Competition Designs prepared to suit all styles; quaint simple effects in modern treatment; thorough knowledge of prices, &c.—J. DAVY DEAN, 84, Dale Street, Lancaster. 360

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E. F. HASSART, 165, Queen Victoria St., E.C.

Contracts Open.

RUGBY URBAN DISTRICT COUNCIL. TO CONTRACTORS.

The above Council invite TENDERS for the Construction of an Egg-shaped **OUTFALL SEWER**, about 1232 yards in length, together with the Manholes, Connections, and other Works connected therewith.

The Plans, Specifications, and Conditions of Contract can be seen at the office of the undersigned, where also copies of the Bill of Quantities and Form of Tender can be obtained by intending Contractors on payment of Two Guineas, which will be returned on the receipt of a bona fide Tender.

Tenders on the form prescribed and endorsed "Outfall Sewer," must be sent to T. M. WRATISLAW, Esq., Clerk to the Council, High Street, Rugby, on or before the 21st day of MAY next.

The Council do not bind themselves to accept the lowest or any Tender.

By order,
D. G. MACDONALD, Assoc. M.Inst.C.E.,
Surveyor to the Council.

Rugby, April, 1904.

STOCKPORT UNION. TO IRONFOUNDERS AND OTHERS.

Contractors desirous of TENDERING for CAST-IRON VERANDAHS and ESCAPE STAIRCASES for the NEW INFIRMARY, STOCKPORT, are requested to send in their names to me as undersigned not later than MONDAY, May 9th, 1904 (after which date no application will be considered).

Plans and specification may be seen, and all information obtained from W. H. WARD, Architect, Paradise Street, Birmingham (after date named above).

Copies of plans and specification will not be supplied. It will be necessary for those Tendering to take their own particulars.

Contractors shall pay the trade union rate of wages and observe the trade union number of hours as are usually paid and observed in the district.

By order,
CHARLES FREDERICK JOHNSON,
Union Offices, Stockport, Clerk to the Guardians.
25th April, 1904.

COUNTY BOROUGH of WEST HAM. PRIVATE STREET WORKS ACT, 1892. TO CONTRACTORS.

The Council hereby invite TENDERS for MAKING-UP the following STREET:—
CHARGEABLE LANE.

Plans may be seen, and specification, form of tender, and further particulars obtained at the office of Mr. JOHN G. MORLEY, Borough Engineer, Town Hall, West Ham, E., upon payment of one pound, which will be returned upon receipt of a bona fide Tender.

Tenders, endorsed "Tender for Private Street Works," to be sent to my office not later than FOUR o'clock on TUESDAY, 10th MAY, 1904.

The Council does not bind itself to accept the lowest or any Tender.

The Contractor will be required to enter into a bond with two sureties for the due performance of the contract, and no work will be ordered under the contract until such bond has been duly executed.

The contractor whose Tender is accepted, and with whom a Contract is entered into, will be required to pay to the whole of his workmen such rate of wages, and observe such hours of labour as are recognised by the Workmen's Trade Unions, and shall not assign, nor underlet, or make a sub-contract with any person or persons for the execution of any part of such work. In the event of any breach of such agreement the Council will enforce the penalty clause in its entirety.

By Order of the Council,
FRED E. HILLEARY,
Town Clerk.
Town Hall,
West Ham, E.
April, 1904.

TO ENGINEERS and Others.

The Metropolitan Asylums Board invite TENDERS for ENGINEERING REVISIONS in LAUNDRY, and EXHAUST and CONDENSED STEAM, HOT-AIR, and RAIN-WATER UTILISATION, at Leavesden Asylum, near Watford, Herts, in accordance with drawings and specification prepared by Mr. W. T. HATCH, M.I.C.E., M.I.M.E., Engineer in Chief.

Drawings, specification, conditions of Contract, and form of Tender may be inspected at the Office of the Board, Embankment, London, E.C., on and after FRIDAY, APRIL 22nd, 1904, and can then be obtained upon payment of a deposit of £2. The amount of the deposit will be returned only to persons who have sent in bona fide Tenders in accordance with the regulations.

Tenders, addressed as noted on the form, must be delivered at the Office of the Board not later than TEN a.m. on TUESDAY, 17th MAY, 1904.

By Order,
T. DUNCOMBE MANN,
Clerk to the Board.
18th April, 1904.

If
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have
anything
to sell

or if you want to buy anything, if you require a situation, or if you have a berth vacant, the best medium for advertising your want is THE BUILDERS' JOURNAL. Advertisers in our Miscellaneous Columns obtain satisfactory results, and we frequently receive letters stating that an advertisement in the Journal brings immediate replies.

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Write your advertisement clearly and send it to the Manager, Builders' Journal, Great New St., Fetter Lane, E.C.

It
will
bring
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results.

EMPLOYMENT REGISTER.

Too late for Classification.

- 362.—ARCHITECT, experienced, with own office takes out quantities, &c., mod. terms.
- 363.—BRICKLAYER, age 27, abstainer. Town or country.
- 364.—CARPENTER and JOINER, Factory or Estate. Good workman.
- 365.—WORKING FOREMAN, age 45, well up in all branches. Town or country, good refs.
- 366.—BUILDER'S ASSISTANT, age 27, ten yrs. ex. Abstracting and billing, prime costs, office routine, &c. Excellent refs.
- 367.—JOINER, good, age 23, eight yrs. ex.; well up in stairs and fixing, &c.
- 368.—GENERAL FOREMAN, age 41. Trade, Carpenter, Town or country, good refs.
- 369.—STAINED GLASS, MOSAICS, LEADED LIGHTS, DESIGNS and CARTOONS, &c.
- 370.—BRICKWORK, POINTING or GAUGE WORK. Contract or speculation, good refs.
- 371.—GENERAL FOREMAN, age 40. Trade, Bricklayer. Well up in all branches.

See p. xxii for the Employment Register.

5 O'CLOCK P.M. MONDAY IS THE LATEST TIME FOR RECEIVING "WANT" ADVERTISEMENTS.
OFFICE: 6, GREAT NEW STREET, FETTER LANE, E.C.

TENDERS—cont. from p. xv.

London, N.—For the erection of stables, White Hart Lane, Tottenham, N., for Messrs. Fremlin Brothers, brewers, Maidstone. Mr. Augustine C. Green, architect, 111, Fore Street, Edmonton, and 40, Bruce Castle Road, Tottenham:—

F. Bull	£2,225
Wallis & Son	1,989
J. Almond & Son	1,950
Mattock Brothers	1,897
W. Lawrence & Son	1,887
Elmore & Son	1,881
A. Monk	1,856
J. Stewart	1,827
J. Groves	1,795
A. Fairhead & Son	1,757
A. Porter	1,683
H. Knight & Son,* Tottenham	1,594

* Accepted.

London, S.W.—For the erection of a block of residential flats to be called Ringford House, West Hill, Wandsworth, S.W. Messrs. Palgrave & Co., architects, 28, Victoria Street, S.W. Quantities by Mr. James Farrell:—

J. Hollingsworth, Penge	£7,851
J. & M. Patrick, Wandsworth	7,290
C. Gray, Shepherd's Bush	7,241
N. Lidstone, Blackstock Road	7,237
Peerless, Dennis & Co., Eastbourne	6,876
Dean & Co., Croydon	6,604
Martin, Wells & Co., Vauxhall	6,475
F. G. Minter, Putney	6,350
J. Ferguson & Co., Tottenham	6,348
Foster Brothers, Norwood	6,314
S. E. Moss & Co., Southend	6,250
Cropley Brothers, Epsom	6,197
J. Hebblethwaite, Icknham	6,196
George Newton, Southwark	6,172
Johnson & Co., Southwark Bridge Road	6,149
A. Leather, Wandsworth	6,138
R. Ward & Son,* Battersea	5,497

* Accepted subject to variations.

Merthyr Tydfil.—For the construction of works, consisting of masonry abutments, wing walls and piers for a three-span lattice-girder bridge over the River Taff, boundary walls, retaining walls, approach road, roads and footpaths, fencing and other works connected with the laying-out of the intended addition to the cemetery, and in widening and improving paths and roads in the existing cemetery, for the Merthyr Tydfil Urban District Council. Mr. Thomas Fletcher Harvey, C.E., engineer and surveyor:—

Jones & Davies, Dowlais	£5,212 12 8
D. P. Davies, Dowlais	5,132 14 10
E. Jones, Dowlais	4,989 4 0
Evans & Owen, Cefncoed	4,771 17 7
J. Sutherland, Abercynon	3,974 1 0
W. Brown,* Merthyr Tydfil	3,853 5 1

* Accepted.

Melton Mowbray.—For the erection of the Melton and Belvoir Isolation Hospital on the Scalford Road, Melton Mowbray. Mr. Edmund Jeeves, architect, Melton Mowbray:—

F. Read, Grantham	£12,929 9 8
W. Woodsend, Nottingham	9,795 0 0
C. Barnes, Melton Mowbray	9,473 0 0
J. E. Johnson & Son, Leicester	9,394 0 0
F. Messom, Nottingham	9,160 1 8
J. Hutchinson & Son, Nottingham	9,112 0 0
W. Maule & Co., Nottingham	9,089 19 11
H. Vickers & Son, Nottingham	9,065 0 0
J. Freer, Barrow-on-Soar	8,953 13 8
Thompson & Sons, Nottingham	8,896 18 0
T. Fish & Sons, Nottingham	8,894 0 0
E. Clarke, Melton Mowbray	8,891 10 0
Haskard, Rudkin & Beck, Leicester	8,882 0 0
Nichols Brothers, Oakham	8,833 6 11
T. H. Harper, Carlton, Nottingham	8,617 16 2
C. Wright, Leicester	8,470 19 10

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ALFRED CARTER & CO., LIVERPOOL.

E. Frisby, Frisby, Leicester	£7,835 0 0
T. & H. Denman,* Melton Mowbray	7,795 0 0

* Accepted.

Plymouth.—For alterations and additions to 73, George Street, for the Capital and Counties Bank, Ltd. Mr. A. G. Bewes, architect, 10, Courtenay Street, Plymouth. Quantities by Mr. S. W. Haughton, 22, Courtenay Street, Plymouth:—

Pearn Brothers	£4,445
G. B. Turpin	4,265
Pethick Brothers	4,244
A. N. Coles*	4,203

* Accepted.

[All of Plymouth]

Plymouth.—For the execution of sundry drainage and other works at the Plymouth Workhouse, for the Guardians. Mr. H. J. Snell, architect, 11, The Crescent, Plymouth:—

T. May	£2,316 0 0
R. H. B. Neal, Ltd.	2,291 0 0
J. Crockerell, Devonport	1,893 4 10
J. H. Blackell & Son, King Gardens	1,859 0 0
W. E. Blake	1,847 10 0
J. Paynter	1,796 0 2
G. B. Turpin	1,661 0 0
S. Roberts, West Hoe	1,631 0 0
W. C. Shaddock, Brynterion, Mannamead	1,567 11 0
Pearn Brothers	1,540 0 0
T. Shaddock*	1,522 2 0

* Accepted.

[Rest of Plymouth.]

Redhill.—For the erection of a public-house, "The Flying Scud," Earlswood, Redhill, for Messrs. Mellersh & Neale, Ltd. Mr. E. Penfold, architect, Reigate:—

W. F. Wilkinson	£1,620 0 0
A. B. Wales	1,457 0 0
C. Nightingale & Sons	1,430 0 0
Buckland & Waters	1,410 0 0
C. Parsons	1,407 0 0
J. King & Son	1,393 0 0
J. Waycott	1,288 8 0
E. Worsell	1,240 0 0
G. Elsey & Sons	1,146 0 0
S. Jeal	1,145 0 0

Reigate.—For the erection of three houses, Croydon Road, Reigate, for Mr. T. Pither. Mr. E. Penfold, architect, Reigate:—

J. King & Son	£1,840
A. G. Lovell	1,794
J. Waycott	1,785
W. Wickham	1,744
C. Parsons	1,590

G. Elsey & Sons	£1,565
S. Jeal	1,562

Southend-on-Sea.—For extension of the engine and boiler-houses at the electricity works, London Road, for the Corporation. Mr. E. J. Elford, M.I.M.E., borough engineer:—

Wellerman Brothers, Hyde	£1,557
R. Elvy	1,363
Foster Brothers, London, S.E.	1,253
A. R. Whur	1,198
J. C. Flaxman	1,175
F. & E. Davey	1,169
S. E. Moss & Co.*	1,100

Borough surveyor's estimate, £1,350.
* Accepted. [Rest of Southend-on-Sea.]

Swansea.—For the erection of electricity station and offices at the destructor works, Llangyfelach Street, for the Corporation:—

R. Jenkins	£1,800 0 0
G. Davies	1,729 1 7
J. Marles & Sons*	1,625 0 0

* Accepted. [All of Swansea.]

Winscombe (Somersetshire).—For the erection of a house and stable, &c., at Sidcot for Mr. J. Knott. Messrs. Hans Price & W. Jane, architects, Waterloo Street, Weston-super-Mare:—

Gleed Brothers, Bridgwater	£1,480 0 0
A. H. Curtis, Shipham	1,423 19 10
W. A. Green, Clevedon	1,257 0 0
Ford & Son, Cheddar	1,232 0 0
C. Fear,* Weston-super-Mare	1,100 0 0

* Accepted house only at £950.

The new Fire-Station at Bootle has been opened. It is situated in Strand Road. It consists of engine-house, superintendent's and deputy-superintendent's houses, stables, houses (on the flat system) for twenty men, hose-drying tower 100ft. high, and at the north-west corner a police-station. The front elevation is faced with red-pressed bricks, the rest being grey bricks, with red sandstone dressings. Internally the engine-house and cells will be lined with glazed bricks. The architects are Messrs. Anderson & Crawford, of Liverpool, and the contractor is Mr. Walter Musker, of Bootle

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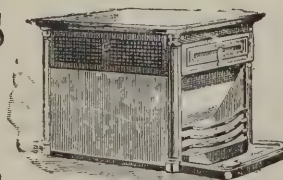
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THE BUILDERS' JOURNAL

AND ARCHITECTURAL RECORD.

May 11, 1904. Vol. 19, No. 483.

6, Great New Street, Fetter Lane, E.C.

Summary.

Professor Capper delivered a lecture on "Ruskin and Architecture" at Manchester last week in the course of which he said Ruskin's moral earnestness and high social ideals, however stimulating and ennobling when reserved for their proper place—and we could not but be endlessly grateful for them—became a source of weakness when urged irrelevantly in art, as when the right use of iron in construction was seriously discussed in the light of a phrase in the Book of Jeremiah. (Page 230.)

The important case of *Colls v. Home and Colonial Stores, Ltd.*, decided in the House of Lords last week, reverses the judgment of the Court of Appeal and reinstates that of Mr. Justice Joyce. The point at issue was whether the owner of ancient lights is entitled to the whole amount of light which has ever reached his windows, or only such an amount as is sufficient for ordinary purposes of inhabitation or business. The House of Lords has decided in favour of the latter. The test is whether the obstruction complained of is a nuisance or not. (Page 229.)

At the Cassland Road Higher-Grade Board School, Hackney, the intaken air impinges against two large drums slowly revolving in water and covered with fibrous matting. After being cleaned in this way it passes through two disc fans driven by a 17 b.h.p. electric motor. Tests of the air in the school-rooms showed an average of only six parts CO₂ in 10,000 volumes. (Page 228.)

The Manchester Society of Architects is compiling a list of old buildings within a district seventy miles square surrounding the city and asks for outside assistance. (Page 230.)

In a paper on "The Value of Science in an Architectural Curriculum" which he read before the Architectural Association last Friday, Mr. A. E. Munby, F.C.S., urged that scientific training was all-important for the architect. Assuming the teaching hours for a student to average twenty-six per week, and his course of training to extend over four years, statistics give the following as percentages of his total academic career devoted to science and its applications:—McGill University, 30½; University College, London, 26; Glasgow Technical College, 20½; University of Illinois, 19; Dresden Technischen Hochschule, 17; Bristol Merchant Venturers' College, 15½; Stuttgart Technischen Hochschule, 15½; Massachusetts Technical Institute, 13½; University of Pennsylvania, 12½; King's College, London, 12; Harvard University, 10½; Technischen Hochschule, Charlottenburg, 9½; Columbia University, 7; Ecole Spéciale d'Architecture, 6; Manchester School of Technology, 6; Liverpool University, 6. (Page 220.)

The Question of the Moment.

REGISTRATION is undoubtedly the matter of chief professional interest among architects just now. The arguments from both sides have been put forward on innumerable occasions, and in former issues of our own Journal we have devoted a great amount of space to expressions of opinion on the subject, so that there is no need to reiterate what has already been said very completely. Yet, at a time when a special committee of the Institute is gathering opinions and facts about registration it may be well to recall one or two of the considerations that lie at the root of the whole problem. When all the eloquence of language is passed over, and the ethics of architectural practice are set aside, the anti-registrationists, consisting mostly of "art architects" or those in sympathy with them, seem really to have two pleas—one that it is impossible to examine a man in his art, the other that good and ill alike would be branded with the same hateful hall-mark if the profession were to be made "close" and admission to it was only possible through an examination which would in no wise be a test of the actual ability of the candidate to practice as an architect. On the other hand, the pro-registrationists contend that at the present time there are scores of men now calling themselves architects, and practising as such, who are absolutely unqualified to do so, that the preparation requisite to pass the statutory examination would tend to improve taste by compelling candidates to study the best examples, and that the professional status of the architect would be vastly bettered. (It is worth noting that a great deal of nonsense is talked about this last, as if the architect were not a part of a business community carrying out needs in an ordinary manner, and being paid for doing so like any other practitioner.) Despite the fact that a great proportion of the wretched houses that deface our towns are erected by builders themselves, who would continue to do so whether architects were registered or not, and the fact that Fellows of the Institute, who have passed the examinations, produce the most atrocious designs, we are inclined on the whole to favour registration as likely to benefit the profession of architecture and—what is most important—to form the basis of a reorganized and thorough system of education. But we would express no further opinion till the Institute committee has issued its report. A meeting was held on March 28th and another yesterday. Readers will doubtless be interested to know that

at the former the following members were present:—Mr. Aston Webb (president); Mr. John Belcher and Mr. John Slater, vice-presidents; Mr. Alexander Graham, hon. secretary; Messrs. C. E. Bateman, A. W. S. Cross, F. T. Baggallay, E. T. Hall, Charles Heathcote, Arnold Mitchell, Beresford Pite, G. H. Fellows Prynn, W. H. Seth-Smith, John W. Simpson and Leonard Stokes, members of Council; Messrs. R. S. Balfour, H. V. Lanchester and Walter Millard, Associate Members of Council; Mr. Henry T. Hare, representing the Architectural Association; and the following representatives of allied societies:—Mr. Arthur Clyne (Aberdeen), Mr. Arthur S. Parker (Devon and Exeter), Messrs. J. T. Cackett and J. Walton Taylor (Northern), Mr. Herbert Davis (York), Mr. A. Hunter Crawford (Edinburgh), Mr. E. M. Gibbs (Sheffield), Mr. Howard H. Thomson (Leicester), Messrs. G. C. Ashlin, R.H.A., and W. J. Gilliland (R.I.A. Ireland), Mr. H. Dare Bryan (Bristol), Mr. A. W. Brewill (Nottingham), Mr. Arthur Harrison (Birmingham), Mr. J. W. Beaumont (Manchester) and Mr. H. K. Bromhead (Glasgow).

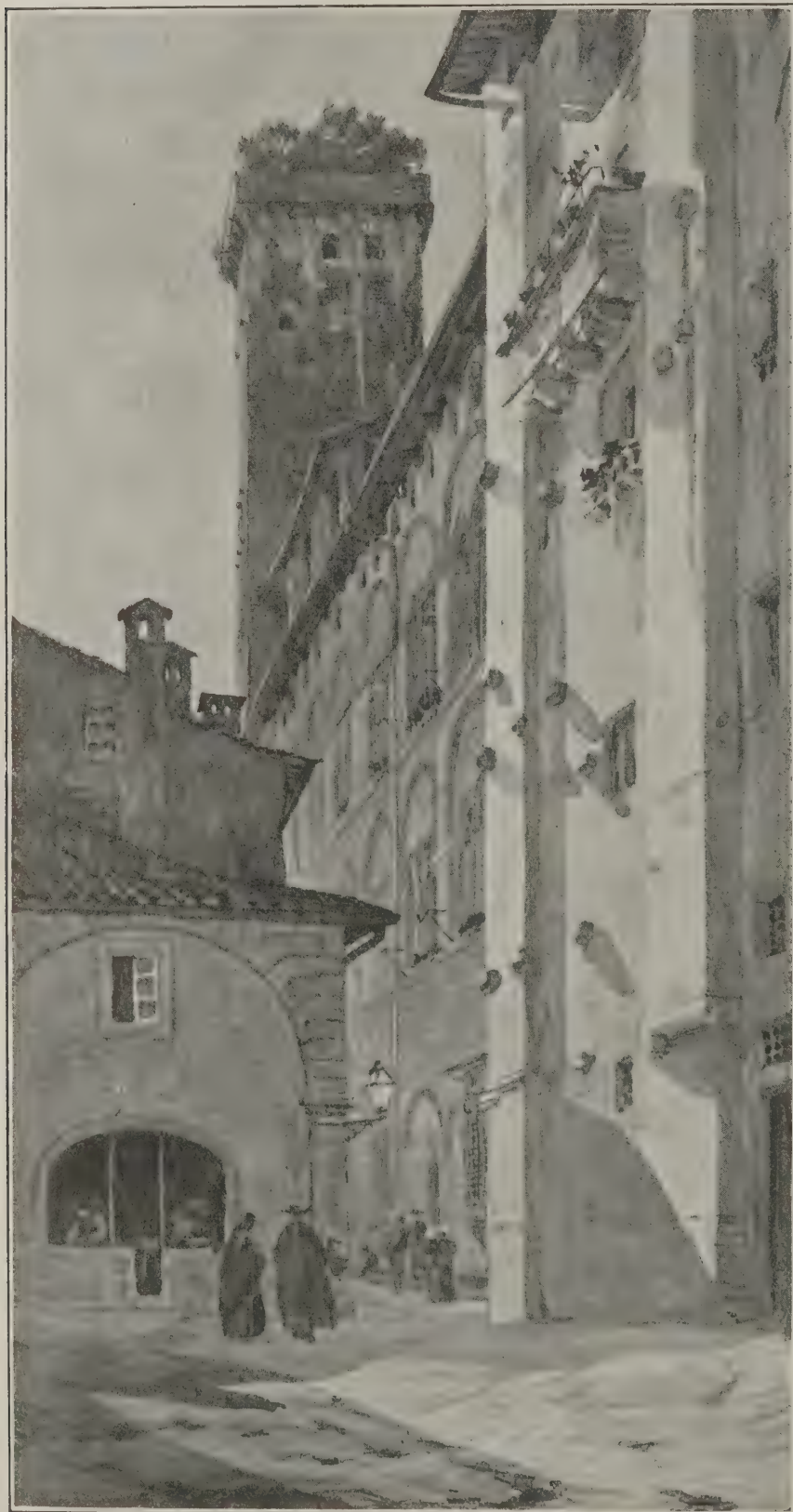
The "Ancient Lights" Decision.

THE "ancient lights" decision of the House of Lords last week, reported on p. 229 of this issue, will be read with general approval as being a fair interpretation of that ambiguous and unfortunate statute, the Prescription Act of William IV. The case, however, shows only the more clearly the necessity for a new law on the subject, and it is to be hoped that the "Easement of Lights Bill," before Parliament this session, will be passed without delay. The precise questions in the case of *Colls v. Home and Colonial Stores* were whether after twenty years the owner was entitled to all the light he enjoyed at the beginning and whether mere diminution of light gave a right to an injunction or to damages. Fortunately the House of Lords has reversed the decision of the Court of Appeal and reinstated that of Mr. Justice Joyce, and as the matter now stands it may be taken that a person is entitled to only so much light as is reasonable and necessary; the test of obstruction is whether the building complained of is a real nuisance, which must be decided on the merits of each case. That such a decision is likely to create more litigation is apparent—which makes one hope all the more that the "Easement of Lights Bill" will become law—but it clears away a number of misconceptions that have often been used to extort compensation for imaginary injuries.

DRAWINGS OF ARCHITECTURE.

CONTINUING the series which we have been publishing during the last six months, we now give a drawing by Mr. Walter Millard of a street scene in Lucca, hung in the water-colour room at the Royal Academy this year. It is a delightful piece of colour and composition: the former we are unfortunately unable to give, though, of necessity, the drawing must lose by its absence. We have remarked before that artists' drawings of architecture, while

being pleasing and skilful in their general treatment, are often sadly at fault in matters of detail, for the reason that artists, as a rule, do not know much about architecture. On the other hand, when architects attempt pictorial effects the artist not infrequently murmurs something unappreciative, which we know is commonly the case when artists walk into the architectural room at the Academy. But here Mr. Millard escapes both criticisms by being able to draw as an artist with an architect's knowledge of his subject. Some other drawings by him were reproduced in our issue for March 16th last.



DRAWINGS OF ARCHITECTURE: A STREET SCENE IN LUCCA, BY WALTER MILLARD. (ACADEMY, 1904.)

ARCHITECTURAL ASSOCIATION.

Science in an Architectural Curriculum.

A MEETING of the Architectural Association was held on Friday evening at 9, Conduit Street, W., the chair being occupied by Mr. Henry T. Hare, president. The following were elected members of the Association:—Messrs. G. B. Clay, S. H. J. Murch, A. B. Scarlett, G. B. Cobbett, J. R. Musto, C. B. Cleveland, J. N. Keasley and H. Kershaw. The following further donations to the New Premises Fund were announced:

	£	s.	d.
J. H. Christian -	-	-	10 10 0
Prof. Henry Adams -	-	5	5 0
W. H. Jamieson -	-	5	0 0
J. H. Belfrage -	-	1	1 0
L. Simmons (second donation) -	-	1	1 0

A vote of thanks was accorded to the School of Design visitors, the retiring president and members of the Committee, and the Press.

Mr. A. E. Munby, F.C.S., read a paper on "The Value of Science in an Architectural Curriculum." After referring to the extraordinary changes which had taken place in every branch of teaching during recent years, the revolution of methods which had killed the old fashioned apprentice, the institution and growth of polytechnics—the latest of which in London is that at Brixton, devoted entirely to the building trades—Mr. Munby went on to speak of the existing facilities for architectural education, urging that science should receive more consideration. A vast army of industrial workers, becoming every year better equipped in the principles of their trades, was producing novelties which were, broadly speaking, improvements in methods of construction, sanitation and kindred branches of industry that depend upon the building trades for support. These new productions were, of course, put forward with business intentions, but at the same time they were the outcome of the thought of specialists, and to the architect was offered the crowning position in regard to them; he was the court of appeal as to the success or failure of such advances. The suggestion that the individual should attempt to give judgment on the new products of every trade would be, of course, impracticable. But this difficulty need not plunge us into specialization, which, if carried too far, would lead to the destruction of the profession as such. It could be met largely by centralization. The matter had been dealt with in a paper read last year before the Association. The establishment of a General Information Bureau in touch with the trades, for the collection of statistics, standardization and testing, would go far towards solving what must some day become a pressing question. In the meantime it was most gratifying to learn that the Institute was in communication with the director of the National Physical Laboratory with a view to arranging facilities for conducting tests on materials.

Continuing, Mr. Munby dealt with some tables he had compiled in respect of the curriculum of architectural schools at home and abroad. While the courses in this country extend over not more than three years, those in America and Germany usually extend over four years, and the total average given in the last column but one of the table on the next page is taken on the four years' basis for all. Lecture-room and laboratory work (of which there is a fair proportion) in both pure and applied science are included in the hours given, but no allowance is made for the students' private reading. Under physics are included such applications as courses on structure stresses, hygiene and materials, but not courses on ordinary construction or on mathematics.

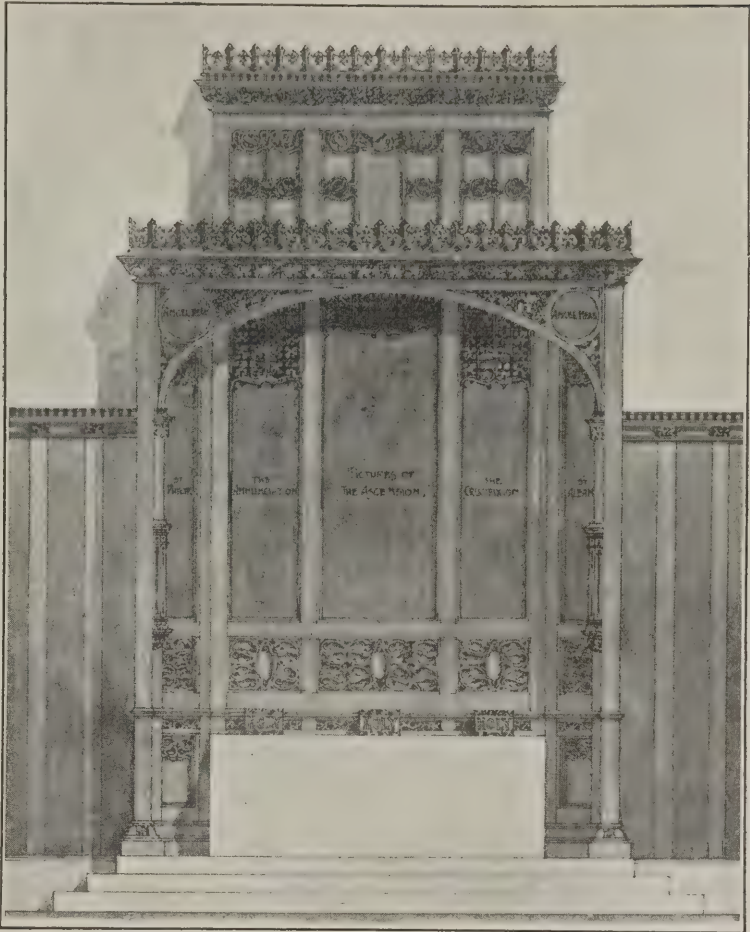
If we assume that the teaching hours for a student average twenty-six per week, and

that his course of training extends in all cases over four years, then the statistics will give the following as percentages of his total academic career devoted to science and its applications:—McGill University, 30½; University College, London, 26; Glasgow Technical College, 20½; University of Illinois, 19; Dresden Technischen Hochschule, 17; Bristol Merchant Venturers' College, 15½; Stuttgart Technischen Hochschule, 15½; Massachusetts Technical Institute, 13½; University of Pennsylvania, 12½; King's College, London, 12; Harvard University, 10½; Technischen Hochschule, Charlottenburg, 9½; Columbia University, 7; Ecole Speciale d'Architecture, 6; Manchester School of Technology, 6; Liverpool University, 6. The omission of the courses of the Architectural Association from the above list is due to the different system adopted which makes a fair comparison impossible; the amount of time devoted to science will, however, be admitted as small.

Proceeding, Mr. Munby said:—As showing the value of a training in the principles of science I will now deal in detail with some of the applications of science to architecture.

Physics

deals with matter and energy, and, therefore, in its widest sense includes chemistry. In its generally accepted sense, however, it is taken to include dynamics (often called mechanics), acoustics, optics, heat, magnetism and electricity, and we may refer shortly to its branches in this order. The application of the dynamics of solids to constructional work is too obvious to need any discussion, and forms a recognized part of all architectural courses. Lectures on this subject should always be experimental and supplemented by work in a mechanical and testing laboratory, which is the case in most institutions. The value of such a course may extend beyond mere construction—for example, a knowledge of the use of a delicate balance and the appreciation of specific gravity might save a surveyor much time in the measurement of valuable and irregular sites. The dynamics of liquids and gases, on the other hand, generally receives but scant treatment. An architect has constantly to deal with problems involving water-supply and the flow of water and drainage in pipes. He must not suggest a lift pump for a 35ft. well, nor a water turbine without considering the loss of "head" by friction, and he must have an hydraulic ram for country houses blessed with a stream in their grounds. He cannot tackle these problems unless he has an elementary knowledge of the principles of hydrostatics and kinetics. Again, the dynamics of gases brings us to the important subject of ventilation, a knowledge of the principles involved in which would render many problems intelligible and interesting, and often point a way to the introduction of ventilation



REREDOS, ST. PHILIP'S CHURCH, NEWCASTLE-ON-TYNE. BOYD AND GROVES, ARCHITECTS.

This reredos is to be executed in oak, on a base of Siena marble. The five large panels will be filled with paintings (starting from the left) of St. Philip, The Annunciation, The Ascension, The Crucifixion and St. Alban. The two circular panels in the spandrels contain angel heads, in colour. Portions behind the carving will be coloured so as to show through the cut-out spaces. The drawing is in this year's Academy.

schemes at but little cost. Mechanical fans, now so much used, require more discretion in selection than they generally get, while air ducts and bends require thought in planning to ensure success.

Acoustics

is of all the branches of physics the most difficult in its practical application, and probably a deep study of the subject would be of but little value to the architectural student. A knowledge of the velocity of sound in air and the conditions (chiefly depending upon temperature) under which this varies will enable some notion to be obtained as to the probable interference by reflection with the voice of a speaker, a consideration too often overlooked in public buildings; and in these days when we are

herded together in flats and attached houses the conductivity of different materials for sound has become a highly important matter.

Heat.

A knowledge of the laws of heat finds many applications in architecture. The amount of expansion of materials with rise of temperature is by no means always appreciated. The Forth Bridge, for example, is just about 1yd. longer in summer than it is in winter, owing to expansion, and though architects are not usually called upon to deal with such spans as this, the growing use of long steel joists renders the fixing of such joists often worthy of care. The great coefficient of expansion of lead, nearly three times that of steel, accounts in part for its "crawling" propensities. Joints of materials which expand unequally are never likely to remain sound. For this reason steel and concrete will make a much more permanent joint than steel and brickwork in mortar or cement.

Upon the expansion of liquids depends the whole system of water circulation, and here I would venture to point out the hardship imposed upon good firms in tendering for hot-water plant when the architect does no more than state the temperature to be exacted, as it is then easy for an unscrupulous firm to give a low tender by subsequently supplying a boiler and furnace which will only give the required result by being worked in a detrimental manner with a forced draught, an easy thing to arrange if the system is ever tested. A rudimentary knowledge of the principles of heat would enable the architect to include in his specification, with but little trouble, sufficient detail to safeguard both client and contractor.

HOURS PER WEEK DEVOTED TO SCIENCE IN ARCHITECTURAL COURSES.

Years	Physics.				Chemistry.				Geology.				Total Average	Possible Percentage of Science Entrance Exam.
	1	2	3	4	1	2	3	4	1	2	3	4		
McGill	5	5	7	5	—	6	—	—	—	—	—	3½	7'9	20
University College	—	4	13	3	—	7	—	—	—	—	—	—	6'8	40
Glasgow Technical	—	9	3	—	—	—	—	—	—	—	—	—	5'3	0
Bristol	—	4	6	2	—	4	—	—	—	—	—	—	4'0	—
King's College	—	5	1	—	—	6	—	—	—	—	—	—	3'1	—
Manchester	—	3	1	2	—	—	—	—	—	—	—	—	1'5	17
Liverpool	—	2½	3½	—	—	—	—	—	—	—	—	—	1'5	20
Illinois	—	12	3	2½	—	—	—	—	—	—	—	—	4'9	55
Massachusetts	—	—	5	3	—	2	—	—	—	—	—	—	3'5	—
Pennsylvania	—	3	2	4	—	—	—	—	—	—	—	—	3'3	—
Harvard	—	4	2	3	—	—	—	—	—	—	1	—	2'8	—
Columbia	—	1½	2	2	—	—	—	—	—	—	—	—	1'9	25
Dresden	—	2	5½	2	—	3	—	—	—	3	—	—	4'5	—
Stuttgart	—	6½	—	1	—	2	—	—	—	3½	1½	—	4'0	13
Charlottenburg	—	2	1½	2	—	—	—	—	—	—	—	—	2'5	—
Ecole Speciale	—	1	2	—	—	1	1	—	—	1	—	—	1'5	—



MODEL OF H.M. KING LEOPOLD'S COTTAGE NEAR OSTEND. ARNOLD MITCHELL, F.R.I.B.A., ARCHITECT. (ACADEMY, 1904.)

Perhaps the study of optics has less bearing upon an architect's work than other branches of physics, but a knowledge of the laws of illumination would help him to arrange his lights, and the principles of dispersion are of value for the understanding of colour problems. The comparison of the power of different lights will sometimes be found useful.

Magnetism and Electricity.

Turning to magnetism and electricity, every architect carries a compass, and a little knowledge of terrestrial magnetism will prevent him from overlooking the difference between the magnetic and astronomical north when setting out his buildings. Electricity, although it has a few indirect applications to architecture, is itself of such direct importance that no apology is needed for putting forward its claims in this paper. It is not possible for an architect to intelligibly supervise the electric lighting and power arrangements in a building without some knowledge of the principles of this science. It may be said that he is safeguarded by fire-insurance regulations, but he does not always see that these regulations are complied with, and the insurance companies must take much of the work on faith. To an unobservant eye all wiring work appears much the same, and although it is on the whole exceedingly good, yet when prices are obtained in competition the contractor would be more than human did he never profit by this independence. I know at least one firm with a very high reputation which makes a practice of giving its foreman a commission on what can be saved in carrying out wiring contracts.

Chemistry

has less bearing on architecture than physics, but the general principles of the science are essential to anyone who would really understand materials.

In the selection of a building stone a knowledge of its composition and physical structure is of great value. The weathering of stone, owing to its absorption of water from the atmosphere and the subsequent freezing of this water, depends, as is well known, largely upon its porosity and power of cohesion. Water expands by nearly one-twelfth of its bulk on freezing, and though it may be con-

finied it will still freeze and force the particles of the stone out of place to find room for expansion. A substance would require a cohesive force of about 10,000 lbs. per sq. in. to prevent water confined within it freezing when subjected to only 10 degs. Fahr. of frost.

This expansion of water is of course a purely physical action, but the power of ordinary water in producing chemical changes is no less important. It has been said that no one has ever yet seen pure water; ordinarily it may be considered as a weak solution of carbonic acid, and has considerable solvent action upon many stones consisting of carbonate of lime. Even marble is not proof against its attacks. A case is cited of a marble monument in Gray Friars churchyard which decayed to a depth of $\frac{1}{4}$ in. in sixteen years through the action of the atmosphere and water, but this is of course a very extreme instance. That carbonate of lime is soluble in water containing carbonic-acid gas can easily be demonstrated.

Sulphuric acid, produced in such vast quantities by combustion, not only attacks stone more violently than carbonic acid, but it forms compounds in the stone which occupy more space than the original particles, so that the effects are much like those produced by frost. Silica, of which many sandstones are almost entirely composed, is, on the other hand, entirely unacted upon by any atmospheric acids, and therefore a closely-grained sandstone is usually very durable. Rather curiously, an instance has been cited of a defaced monument of sandstone in the same churchyard of Gray Friars on which the marks of a chisel are visible after more than 200 years.

The action of water upon lead, on account of the poisonous nature of lead compounds, should be considered in arranging a soft-water service. In the presence of nitrates, often found in potable waters, the action of the water upon lead is quite considerable even after a short period. Finally, as regards water, an analysis is a first essential in the selection of a country site, and the architect should be able to understand the analyst's report and to advise his client thereon.

As regards other materials used in building, in slates are found two forms of iron

sulphide, one of which disintegrates on exposure, while the other is permanent and therefore harmless. The presence of free lime—that is, calcium oxide—in bricks, which is sure to cause disintegration, is very easily detected chemically, and where facing bricks are used in important work I would go as far as to suggest that the brickmaker should furnish an analysis of the coal used for firing with a view of guarding against that distressing malady so difficult to cure—efflorescence in brickwork.

The important subject of

Limes, Mortars and Cements

cannot be understood without a knowledge of chemistry. If analyses of these materials were more generally demanded by architects we should hear much less of bad and bulging plaster, friable mortar and the upheaval of cement floors. The strength of cementing materials should be apportioned to that of the bricks. It is mere waste of money, for example, to build in cement some of the miserable slack-baked London stocks which too often find their way into good-class buildings. Anything under the name of Portland cement generally passes unchallenged, and although adulteration is fortunately rare in this country ragstone is sometimes added, but can easily be detected under the microscope. Blue lias lime and Portland cement often exhaust an architect's category as regards cementing materials, whereas selenitic mortars, which allow a large proportion of sand, might often be used with economy. Selenitic limes are used chiefly for plasters, but in dry situations deserve an extended use for mortars. Tests made in France indicate that the strength of Portland cement is increased by making it selenitic, i.e., by the addition of sulphate of lime, but the careful tests of the British Committee on Cements do not confirm this view. The addition of sulphate of lime, however, to ordinary limes appears to produce a considerable increase in strength. Mr. Redgrave cites tests which show that selenitic mortar has about five times the strength under compression that similar non-selenitic mortar possesses, and the tests recorded by the same writer, carried on during the building of the Law Courts, indicate that between brickwork

Messrs. Nelson's selenitized lias lime, used 1 to 5, was more than twice as strong as ordinary lias lime 1 to 3. If these tests can be relied upon, a remarkable financial saving should be effected by following the precedent set by Mr. Street. The lime and sand for a rod of brickwork in ordinary blue lias 1 to 3 are worth about 40s. and in selenitized lias 1 to 5 about 30s., but if this latter is really twice as strong as the former it is not merely one quarter but more than two and a half times as cheap. Were cementing materials sold by strength and not by weight, such points as these would receive more general attention. The breaking strain of a briquette of cement, without a knowledge of its chemical composition, is often of little value. A cement, for example, containing an excess of lime will come out of a test with flying colours, but it is most dangerous to use, as it is liable to disintegrate, when of course its cementing power is practically nil. Again, if a cement contains much iron, sodium or potassium it is almost certainly underburnt, as in this case it could not have been raised to the proper temperature without partially fusing in the process.

Metals in Building Work.

The preservation of the metals used in building is often largely dependent upon the substances with which they are in contact. A very small knowledge of electricity and chemistry would point out the extravagance of using any but the purest zinc in a moist atmosphere, and the rapid corrosion which must take place when this metal is left in contact with carbon (as soot or coke, for example) or with copper, iron or lead. The electro-negative character of zinc again renders it open to be acted upon by lime, and therefore to decay in contact with mortar or cement. The oxidation of iron, for similar electrical reasons, takes place in a moist atmosphere with increasing rapidity after the formation of the first film of oxide. The quality of iron, as, for example, the difference between grey and white cast-iron, would be appreciated by a very brief study of the metallurgy of iron and steel.

Timber.

Turning to timber, the important subject of the impregnation of wood, either for its preservation from decay or against fire, is largely a chemical question, while the compounds contained in wood, such as gallic acid in oak (forming as it does an ink in contact with iron), have often to be taken into account.

Paints.

The trade of the painter yields a profitable field for chemical enquiry. Though we specify white lead, prepared by the old Dutch process and well matured, we are not in the habit of seeing that we get it. Second-quality paints are manufactured on quite a

large scale and sold as such; they contain as a substitute for the greater part of the white lead, barytes, chalk or sometimes other bodies, and these are quite inferior in covering and binding power. Barytes, being a heavy mineral, is the most suitable adulterant from the point of view of the vendor. Such paints are easily distinguished by merely treating them with nitric acid if in powder, or if, as would more usually be the case, mixed in oil, without the aid of anything further than a wooden match, a piece of washing soda and a sixpence. Further, if such inferior paints are carefully weighed, then heated and weighed again, they will be found to lose much less in weight than a good lead paint, which contains a considerable proportion of combined water capable of removal on heating. If paints with a white lead base are used in sulphurous atmosphere, such as that of chemical laboratory, or where bad coal-gas is much burnt, they rapidly blacken owing to the formation of sulphide of lead. In such cases zinc white should replace white lead, and for light greens or yellows real chrome green and cadmium yellow. As these paints are more expensive, and have to be employed in larger quantity for the same covering effect, they are often adulterated with white lead. This again may be detected with the aid of a mouth blow-pipe and a piece of charcoal in two or three minutes without resorting to a professional analyst. Similarly the value of black paint, which should always have a base of white lead if it is to protect the material covered, may be ascertained.

I will not try your patience by entering further into the applications to architecture of these three sciences which I have selected for illustration, but in referring to

Geology

will content myself by pointing out its great value as indicating the localities and sometimes the probable quantities of various building stones and their planes of stratification or bedding. Not less valuable is some knowledge of this science when the choice of a site, both from the point of view of health and the stability of the building, is in question. In the matter of well-sinking much needless expense has been often saved and superstitious practices averted by a little knowledge of the strata of the neighbourhood.

Books in the Museums.

With a view to obtaining some idea of the amount of existing scientific literature useful to architects, I have during the last few months visited the libraries of the British, South Kensington and Jermyn Street Museums, also those of the Chemical and the Geological Society and the Patent Office, besides that in which we are here privileged to meet, and certainly that

as physics is concerned. Chemistry, although touched upon incidentally in many books, is exceedingly scarce in the field we are discussing, and I have only found in these seven libraries six small books dealing with the chemistry of building materials. Of these the most important and suggestive are reprints of the courses of lectures given on this subject at the School of Military Engineering, Chatham, copies of which are not easy to obtain. While no general handbook on geology written for the architect seems to exist, several useful works on building stones may be consulted, and perhaps special mention should be made of the little Survey publication on sites in London, with its geological map, which can be purchased at the Jermyn Street Museum.

On the supposition that some knowledge of science is desirable for an architect, let us turn, in conclusion, to the practical means for attaining this knowledge. Many valuable courses dealing with the applications of science in the manner I have endeavoured to indicate already exist, though in some cases they are very curtailed; but the chief point which I wish to make in this paper is—that unless some previous knowledge of the principles of science is insisted upon, such courses cannot be properly appreciated, and the time spent upon them must be largely thrown away.

Suggested Courses.

I would venture to suggest that a passage through the following courses should form part of the requirements of an architectural student at the outset of his career:—

(1) A general experimental course in physics, including laboratory work and dealing with the dynamics of solids and fluids, with heat, magnetism and electricity, and very briefly with acoustics and optics.

(2) A similar course dealing with the elements of inorganic chemistry, touching upon principles, but chiefly of a descriptive character. Mere analysis to be subordinated to simple quantitative work and the preparation of important compounds; the illustrations of chemical laws being based as far as possible upon those substances which would afterwards figure in a course of applied chemistry.

(3) A short course outlining the principles of geology, and dealing with the stratigraphical arrangement of rocks and with petrology rather than with palæontology, and aided by the examination of museum specimens, such as the collection of building stones in the Jermyn Street Museum, and by occasional visits to quarries.

The whole of the above work, in the simple form in which I have it in view, might be undertaken by a person of average intelligence at the age of, say, sixteen, and completed in one year with some twelve hours' teaching per week. This means the devotion of about half a year to pure science, and when a student starts his career early, and has no prospect of practising at the end of three or four years, which is generally the case, such time spent on science ought by no means to be grudged. In the case of older students such knowledge might well be demanded of them upon entrance to their studies, since the facilities for teaching science at our public schools could at the present time easily meet such requirements.

I am sure that the help and encouragement to those engaged in lecturing to more advanced students upon the applications of science would be enormous were such preliminary courses insisted upon, and we might hope that these courses upon applied science would themselves grow under these more favourable conditions; but, were this impossible, at least much more could be done in the time at disposal.

It would ill become me as a return for your invitation to read this paper, and as such a newcomer into the ranks of this



MODEL OF KING LEOPOLD'S COTTAGE.

the Patent Office should be placed first, taking the size of the collection, its accessibility and excellent arrangement into account. While textbooks on pure science leading up to its application in architectural work seem to be non-existent, works on the applications themselves are, of course, very numerous, particularly so far

Association to criticize its educational work. Yet may I be allowed to put the question whether science is sufficiently considered in our curriculum? I am aware that the courses given must be largely governed by the Institute examinations. May we hope that, as the result of the deliberations of the Institute committee on architectural education, science may figure more largely in the preliminary if not in the subsequent examinations? A glance at the requirements of foreign universities shows how much more encouragement is given to science than is to be found here. Cornell, for example, recommends chemistry, physics, geology and a modern language as the subjects for the entrance examination to its architectural courses, and in the final examination for the French diploma the candidate must pass an oral test in applied chemistry, physics and geology.

Lastly, considering the large and varied field in which an architect is called upon to work, would it not be possible to allow a student, within properly restricted limits, to develop along lines best suited to his abilities by the introduction of one or two alternative subjects into his later examinations?

Mr. Hugh Stannus in proposing a vote of thanks to Mr. Munby said he thought he had proved his point. There was a danger however of relying too much upon science, which was a very good servant but a very bad master. In his curriculum for Manchester he had spread the scientific teaching over the whole course so that the student might take it as it was wanted and not learn nearly all in the first year as Mr. Munby proposed.

Mr. H. D. Searles-Wood seconded the vote, and urged the need for more elementary knowledge in the student of architecture.

Mr. A. Maryon Watson thought the architect had quite enough to do without being required to test materials. If clients wanted this they ought to pay specialists. Mr. F. R.

Farrow thought the value of science was more as a mental training, especially in the business faculty. Mr. Hare also spoke, and Mr. Munby replied.

It was announced that the following officers had been elected for the next session:—President, Mr. E. Guy Dawber; vice-presidents, Messrs. Arthur T. Bolton and J. S. Gibson; committee, Messrs. Henry T. Hare, R. S. Balfour, W. A. Pite, Arnold Mitchell, John Murray, G. B. Carvill, Walter Cave, J. MacLaren Ross, A. Needham Wilson and E. W. Wimperis; hon. treasurer, Mr. Francis Hooper; hon. librarian, Mr. W. A. S. Pettit; hon. secretaries, Messrs. Louis Ambler and H. Tanner, junr.; hon. solicitor, Mr. W. H. Jameson; and hon. assistant librarians, Messrs. E. Gunn and C. M. Crickmer.

Bricks and Mortar.

Aphorism for the Week.

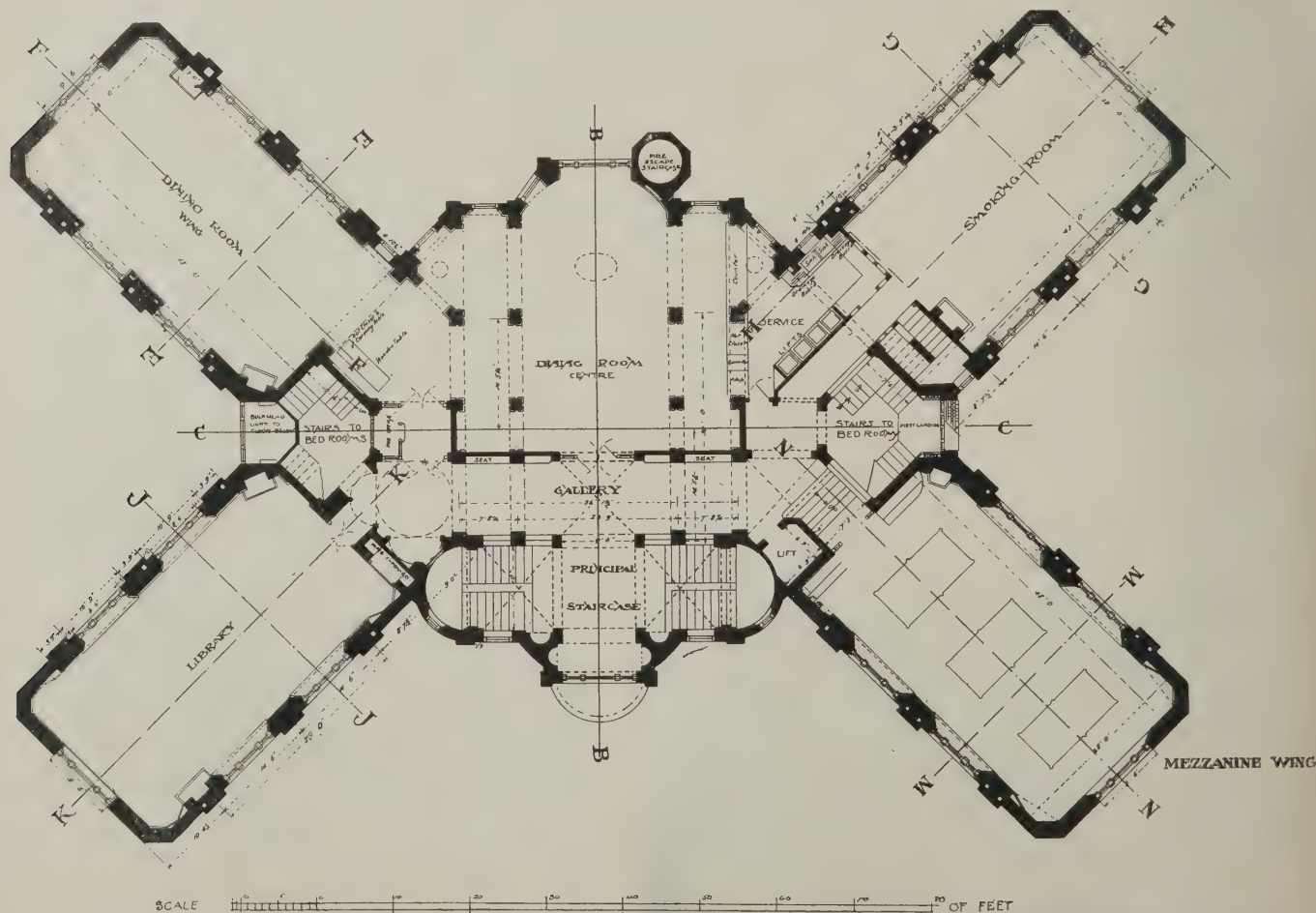
My notion is, a practical builder that's got a bit o' taste makes the best architect for common things; and I've ten times the pleasure i' seeing after the work when I've made the plan myself.—ADAM BEDE.

Our Plates.

The drawings of the Pontypridd District Offices, by Mr. Henry T. Hare, and Ingram House, Stockwell Road, London, S.W., by Mr. Arthur T. Bolton, are both exhibited at the Academy this year. A ground-floor plan of the latter is given on this page. The building has a lower ground floor with a lecture hall and gymnasium occupying the central space, with lockers, baths and dressing-room below the dining-room, a billiard-room below the library, a kitchen below the smoking-room and servants' bedrooms in the lower part of the other remaining wing. The building as being erected will accommodate 208 residents, and it is intended to

make it a kind of cheap residential hotel for young men associated with the clerical life of London. The provision of a fireplace with a flue for all bedrooms, fitted with a small gas fire with a penny-in-the-slot meter, is one of the features of the scheme, which, with the need for large windows for the two lower floors of club rooms, suggested the constructional scheme of piers connected in large arches with a framework-filling of wooden sashes. The general distribution of the plan, while obviating any courtyard rooms, meets the difficulties of light and air encountered on three sides of the site, which is close to the station of the City and South London Railway (which provides quick communication with the City) and is also close to many lines of trams and omnibuses giving access to all parts. A feature of the plans is the ample bathroom accommodation up stairs and down, and the large lavatory building, arranged in duplicate, on the lower ground floor. The balcony at the fifth-floor level, 63ft. above the street, provides a means of escape in case of fire, circulating round the building, and connecting the two bedroom staircases. There is also a "panic" fire-escape staircase of iron in the centre block, leading down on to the large flat over the dining-room bay, and thence by a short turret stair to a flat 7ft. 6in. above the street. The builders are Messrs. Rudd & Son, of Grantham.

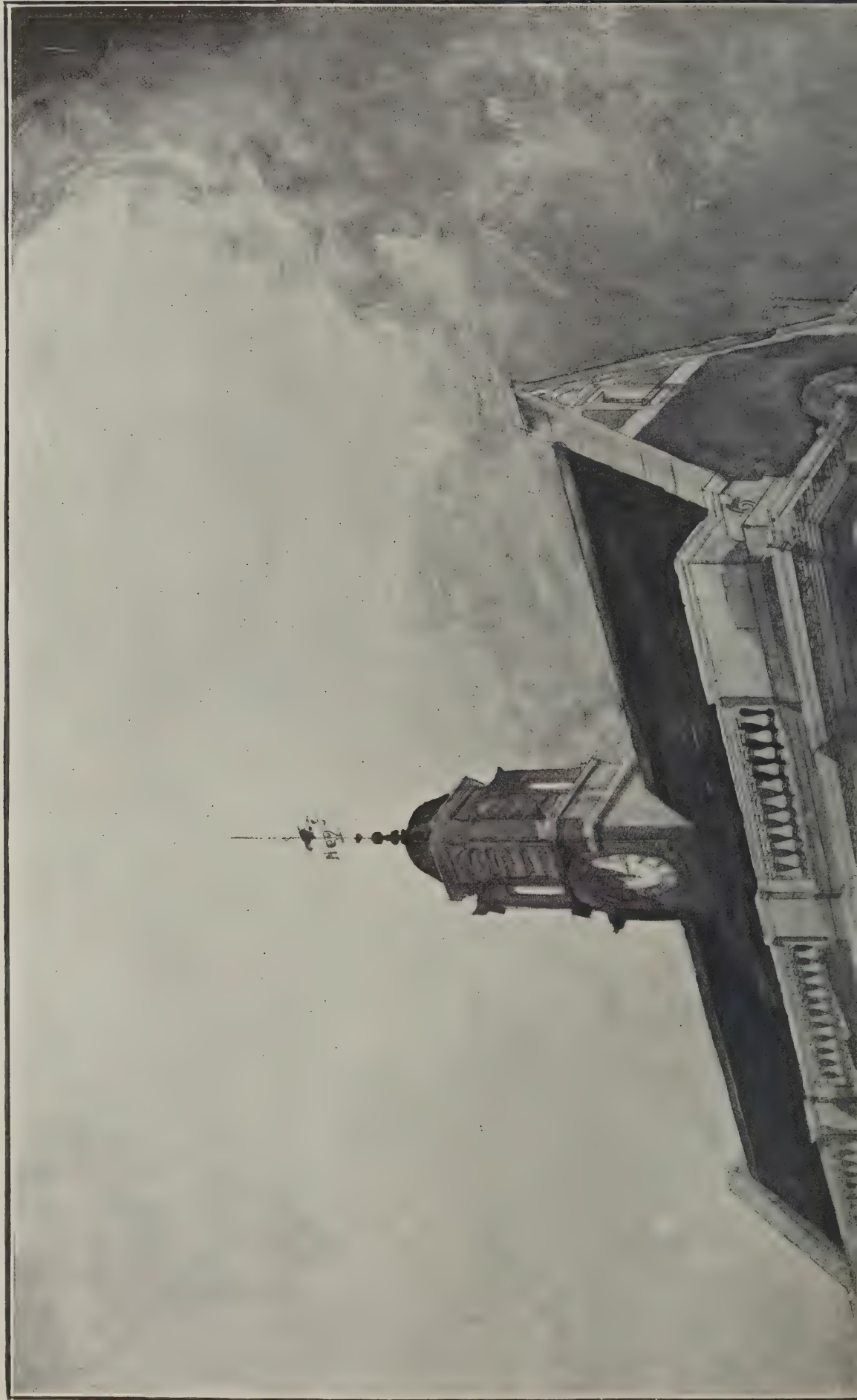
Competition for Free Library, Public Offices and Assembly Hall, Ilkley—The first premium (£100) has been awarded to Mr. William Bakewell, F.R.I.B.A., Leeds; the second premium (£50) to Mr. Reginald T. Longden, Burslem; and the third premium (£20) to Messrs. Septimus Warwick, A.R.I.B.A., and Herbert A. Hall (joint architects), London. Sixty sets were submitted. The council were assisted in the selection by Mr. G. B. Bulmer, F.R.I.B.A., Leeds.



INGRAM HOUSE, STOCKWELL ROAD, LONDON, S.W.: GROUND-FLOOR PLAN. ARTHUR T. BOLTON, A.R.I.B.A., ARCHITECT.

LIBRARY
OF THE
UNIVERSITY OF ILLINOIS

*Supplement to
THE BUILDERS' JOURNAL AND ARCHITECTURAL RECORD,
Wednesday, May 11th, 1904.*





DISTRICT COUNCIL OFFICES PONTYPRIDD.

HENRY T. HARE, F.R.I.B.A., ARCHITECT.

(ACADEMY, 1904.)

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OF THE
UNIVERSITY OF ILLINOIS

Views and Reviews.

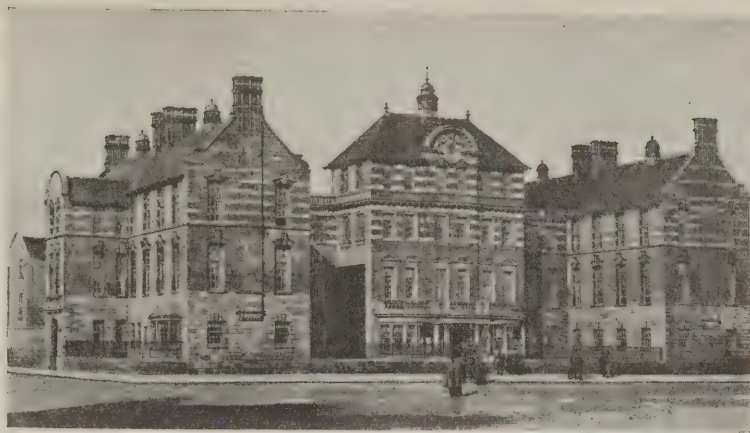
Sewage Disposal.

The long awaited report of the Royal Commission on sewage disposal, so far as regards bacterial treatment, is apparently to be prefaced by a crop of books bearing on the same subject. To those who have been bewildered by the maze of facts, figures and systems which the establishment of the bacterial principle has produced Mr. Knight's little work will come as a God-send. In an extremely lucid and concise manner the author details the principles of modern purification as regards land, chemical and biological treatment, and states the extent to which the last method has progressed. It will be found particularly useful as a preliminary treatise to be read before tackling the larger works, or the Royal Commission report.

Messrs. Clowes & Houston's account of the London County Council experiments in the bacterial treatment of London sewage is a formidable work. Much of it will be unintelligible to those who have not studied the science of micro-organisms. Briefly stated, one of the principal difficulties in the bacterial treatment of the London sewage is the large amount of suspended matter, organic and inorganic, which is contained in the crude liquid. This rapidly chokes the beds. At present the difficulty is overcome by sedimentation of the suspended matter, largely accelerated by chemical precipitants. This sediment or sludge is conveyed in tank steamers out to sea, and the effluent water is allowed to run direct into the river. But the increase in the volume of the sewage resulting from the increase in population renders it necessary to improve the purification standard beyond even its present satisfactory level. As the result of the continued series of experiments the authors recommend:—(1) Grit sedimentation tanks to eliminate the inorganic matter; (2) open settling channels (otherwise open septic tanks) for the breaking up of the organic solid matters; and (3) intermittent treatment of the effluent in bacteria beds. This is put forward as a more thorough and less expensive method than the one in use.

Mr. Dibdin is not a lover of the septic-tank principle, a method he has consistently opposed, and his views on the conclusions arrived at by his successors at the L.C.C. would make interesting reading. The little work under notice is merely a description of the author's new patent bacteria bed, which is of ingenious construction. As is generally known, the difficulty has been to find a suitable material which will allow plenty of space for aëration, and which will not "break down," i.e., disintegrate and settle into a solid mass. So far coke has met with the most favour; but coke is soft and easily friable and continued immersion and frost break it down. Moreover, it cannot then be re-used. Mr. Dibdin's new bed is made of more solid material, such as tiles, or slates built up on the honeycomb principle. The tiles are made with a double ridge on the underside to separate one from another. The slate *débris* beds are built in the same manner, the slates being separated by small slate blocks. The water capacity of a new coarse coke bed rarely exceeds 50 per cent., and is soon reduced to about 30 per cent. by "breaking-down" and the growth of organisms. By this invention the author claims to have removed the difficulty; he gives 30 per cent. capacity, and by thus doubling the capacity reduces the requisite size—and consequently the cost of a bed—by 50 per cent.

The last work to be noticed is the small brochure on the Stoddart continuous sewage filter. One could wish that patentees would follow Mr. Dibdin's example, and not put



DESIGN FOR LONDON LYING-IN HOSPITAL BY CHESTON AND PERKIN.

forward advertising matter under the guise of a general scientific treatise. As regards the filter, it is an attempt to increase the aërating facilities in bacterial beds by keeping the thinnest possible film of liquid constantly flowing over the germ-coated medium (bed material) in the presence of abundance of air. The floor of the filter is highest in the middle, and falls at a rate of 1 in 36 from the centre to the periphery, where it drains into a collecting channel entirely external to the filter. No pipes or channels must be introduced, and the filters can be built without external walls, a rough rubble wall of the "medium" (furnace clinker is most recommended) being used. If walls are used they must be inside the collecting channels and built honeycomb at the base. Immediately above the filter material is fixed the distributing apparatus which forms the patent. This takes the form of gutters under which are fixed drip points. The sewage entering these gutters flows over the margins and drips off the points underneath, passing through the aërated filter on to the floor and so into the collecting channel. The necessary oxidation is then effected. The filters may be as shallow as 3 ft. but are more effective if deeper. J. H. E.-D.

(1) "Sewage-Disposal: A résumé, historical and practical, with notes and comments," by W. H. Knight, M.S.I. London: Sanitary Publishing Co., 5, Fetter Lane, E.C., price 6d.

(2) "The Experimental Bacterial Treatment of London Sewage"; being an account of the experiments carried out by the London County Council between the years 1892 and 1903, by Prof. Frank Clowes, D.Sc. (Lond), F.I.C., Chemist to the Council, and A. C. Houston, M.B., D.Sc., London: P. S. King & Son, 2 and 4, Great Smith Street, S.W., price 10s.

(3) "Recent Improvements in methods for the Bacterial Treatment of Sewage, with a description of the Author's Multiple-Surface Bacteria Beds (Patent No. 16351, 1903) giving double the usual working capacity, with aërobic action throughout," by W. J. Dibdin, F.I.C., F.C.S., &c., formerly Chief Chemist to the Metropolitan Board of Works and the London County Council. London: Sanitary Publishing Company, 5, Fetter Lane, E.C., price 1s. nett.

(4) "On the best method of Sewage-Disposal for Small Communities as adopted by H.M. War Department and numerous Public and Private Bodies," by F. Wallis Stoddart. Bristol: John Wright & Co., Stone Bridge, price 6d. paper covers; 1s. board.

A Student's Book on Quantities.

This book, which the author states has been compiled to assist students who are preparing for the examination in builders' quantities held by the City and Guilds of London Institute, is rather too obviously a class book, and while of service to the student in passing these examinations does not strike one as being so essentially of a practical nature as the subject should warrant. Some very obvious points are most elaborately explained, e.g., "passings in timbers" (p. 69), which has a diagram as well as an explanation; while the instructions for measuring "hollow walls" (p. 37) are "taken as solid work. Describe the width of cavity and the kind and number of the iron ties or bonding bricks to be employed." The author's meaning is certainly

not clear, and whatever reading we may take of his instructions we do not think the system would meet with the approval of a good estimator. Many other instances might be given, but these will suffice. We are of opinion that 15 in. depth of timber (p. 68) is a very high minimum for increased value; 12 in. would be nearer the mark. Again, "short length" of pipe measured in the internal plumber section should state the length, as, although a small item in itself, the difference between, say, 1 ft. and 3 ft. is a large proportion of the cost. The author sets rather a bad example in abstracting these items, by allowing the abstractor to vary the description. At any rate they should be described as "service" or "overflow" pipes, as the case may be. "Running" joints in a pipe are very properly included, but it is not fair to include with the "lineal" item a joint at the extremity of a 4 ft. 6 in. length of flush pipe. We have selected our examples indiscriminately, but they will serve to illustrate what we must consider rather weak points in the book. The illustrations are practical, and for the purpose for which the book is intended, namely, to prepare students for examination, the specimen papers and chapter on mensuration will be useful. This remark, with the qualifications previously mentioned, will apply to the whole book.

"Builders' Quantities," by Herbert C. Grubb. London: Methuen & Co., 36, Essex Street, W.C., price 3s. 6d.

The By-Laws.

Mr. T. Myddelton Shallcross, a Liverpool architect, is a determined opponent of the building laws and their administration, and in this reprint of his articles in our contemporary the "Surveyor" he first deals with their inability to meet the necessities of the present day and then proceeds to make some suggestions for new building by-laws. His view on the matter is that it is futile to patch up the present code, and that those interested in reform can best serve their object by exposing the inefficiency and anomalies of the by-laws, explaining and obtaining support for improved principles of drafting them and their experimental adoption by local authorities; "and by every means to strive to explain to the general public the advantages to be gained by the adoption of rational and more modern-spirited building by-laws": the effect of which course of procedure would be to prepare the way for a well-thought-out and largely-supported Bill.

"The House Healthful yet Economical," by T. Myddelton Shallcross. London: St. Bride's Press, Ltd. 24, Bride Lane, E.C., price 6d. nett.

City of London Lying-in Hospital.—The design by Messrs. Cheston & Perkin was submitted in the recent competition and was the best of the elevations shown.

A CENTURY OF BUILDING PRICES.—V.

By T. E. COLEMAN, F.S.I.

(Continued from p. 192, No. 480.)

WE now refer to Skyring's builders' price-book for the year 1859 in order to indicate the more important differences of price which have taken place during an intervening period of thirty-three years. As far as possible, the items are arranged in the same sequence as already given.

Skyring's Builders' Prices for 1859.

EXCAVATOR'S WORK.

	All materials.	Labour only.
	s. d.	s. d.
Digging, &c. :—		
Digging and throwing out in common foundations not exceeding 6ft. deep		
per yd. cube	0 6	0 5
Ditto in gravel or stiff clay	0 7	0 6
Add if wheeled not exceeding 20yds.		
ditto	0 2	0 1
For every additional 20yds. add ditto	0 2	0 1
Carting away (not exceeding 1 mile)		
ditto	2 6	—

Concrete Work :—		
Concrete in proportions of 1 part ground stone lime to 6 parts gravel		
ditto	7 0	0 6

In the 1826 edition no rates were given for concrete work, and it is probable that it was not then used to any large extent. The prices now quoted for concrete seem very low as compared with the average cost at the present time. It will be observed that the prices for excavator's work are considerably less than those quoted in 1826.

BRICKLAYER'S WORK.

"These calculations are made from the prime cost of place bricks delivered at the job at 27s. per thousand, and 34s. for stocks—the average at this time."

	All materials.	Labour only.
	£ s. d.	£ s. d.
Brickwork :—		
Place bricks laid dry in wells, &c.		
per rod	9 5 0	1 4 0
Ditto all stocks	10 15 0	1 4 0
Place bricks in party or external walls in mortar		
ditto	11 0 0	2 0 0
Ditto all stocks	12 10 0	2 0 0
Ditto done in best manner, picked for the outside and jointed, 4 joints not to exceed 1½ in.		
ditto	13 5 0	2 2 0
If done with blue lias lime add		
ditto	0 12 0	0 2 0
Brickwork in Roman cement, all stocks		
ditto	15 10 0	2 10 0

These prices are considerably lower than those quoted for 1826, stock bricks being priced at 34s. per thousand as against 50s. previously. Ordinary brickwork in Roman cement is here quoted at £15 10s. per rod, whilst thirty-three years previously brickwork in Roman cement in one-brick walls was priced at £27 4s. per rod. In the item of brickwork "done in the best manner," it is laid down that four joints shall not exceed 1½ in., but a modern specification requires that four courses of brickwork must not gauge more than 1 in. in addition to the four courses if laid dry, so that apparently it is now usual to obtain much finer and closer joints in brickwork than was formerly the case.

	All materials.	Labour only.
	s. d.	s. d.
Facings :—		
Picked stock facings, perpend kept		
per ft. super.	0 1½	0 0½
Seconds malms ditto ditto	0 3	0 0½
Best ditto ditto	0 6	0 1
Red brick ditto	0 6½	0 1½
Suffolk white	0 7	0 1½

	All materials.	Labour only.
	s. d.	s. d.
Arches :—		
Rough camber or semi-axed, axed off the soffits and set in mortar for pointing with stocks		
per ft. super.	0 6	0 4
Rubbed and gauged camber, scheme, or semi, set in putty with best malms or red bricks		
ditto	2 6	1 2
NOTE.—The face and soffit of the arch to be measured.		

	All materials.	Labour only.
	s. d.	s. d.
Pointing :—		
Tuck pointing, with a bead jointer and perpend kept, in new work		
per ft. super.	0 3½	0 2
White joint pointing to new fronts		
ditto	0 2½	0 1½
If the scaffold has not been removed since the erection of the new building, deduct		
ditto	0 0½	0 0½

BRICKLAYER'S WORK—cont.

	All materials.	Labour only.
	s. d.	s. d.
Pointing—cont.		
Tuck pointing to old fronts, including the erection of scaffold, raking-out joints, cleaning brickwork with water, and staining the same, the gauged arches to be stopped with cement, coloured, and neatly drawn per ft. super.	0 5	0 2½
Bricknogging :—		
Stock bricks laid edgewise per yd. super.	2 7	0 6
Ditto ditto, flat	3 6	0 8
Brick Paving :—		
Common hard stocks, flat in sand		
per yd. super.	2 6	0 5
Ditto on edge	3 6	0 6
Ditto flat in mortar	2 10	0 8
Ditto on edge	4 0	0 10
Ditto flat in cement	3 5	0 11
Ditto on edge	4 10	1 3
Pantiling :—		
Pantiling laid dry to a 10 in. gauge		
per square	23 0	3 0
Pointing inside only, add	6 0	4 0
Plain tiling :—		
Plain tiling on double fir laths and wrought nails, showing ¾ inches on the face	42 0	6 0
Ditto on oak laths	44 0	6 6

SLATER'S WORK.

	All materials.	Labour only.
	s. d.	s. d.
Welch Slating :—		
Ladies slating and fixed with metal nails	23 0	6 0
Countess ditto	26 0	5 6
Duchess ditto	27 0	5 0
Add to the above if copper nails are used	1 0	—
Westmoreland slating and fixed with copper nails	58 0	8 0

A very considerable reduction is seen in the prices of all descriptions of slating and tiling as compared with the rates current in 1826.

MASON'S WORK.

	All materials.	Labour only.
	£ s. d.	£ s. d.
Stone :—		
Portland stone in block, including cartage and waste		
per ft. cube	3 6	
Painwick stone in block, without labour, including hoisting, scaffolding and setting		
ditto	3 10	
Bath ditto ditto	3 3	
Aberdeen granite, including hoisting and setting		
ditto	5 9	
Devon ditto	4 9	
Labour on Stone :—		
Sawing or half plain work per ft. super.	0 7	0 3
Plain work rubbed to face	1 2	0 6
Sunk work rubbed	1 5	0 8
Labour on Granite :—		
Plain face	2 3	1 9
Ditto to beds and joints	1 7	1 1
Sunk work rough	2 0	1 7
Ditto ditto faced	3 3	2 9
Yorkshire Stone Paving :—		
3 in. York paving	0 10	
Ditto rubbed	1 2	
3 in. rubbed landings	2 0	

	All materials.	Labour only.
	s. d.	s. d.
Steps :—		
9 in. by 6 in. York solid steps (quarry worked)		
per ft. run	2 0	
12 in. by 6 in. ditto (ditto)	2 4	

	All materials.	Labour only.
	s. d.	s. d.
Window Sills :—		
8 in. by 4 in. Portland stone window sills, sunk and throated		
per ft. run	2 9	
For every ½ in. extra thickness add	0 6	
8 in. by 3½ in. Bath stone window sills, sunk and throated		
ditto	1 9	
For every ½ in. extra thickness add	0 3	

CARPENTER'S AND JOINER'S WORK.

	All materials.	Labour only.
	s. d.	s. d.
Memel Fir :—		
"At the prime cost in the timber yard of £4 per load."		

	All materials.	Labour only.
	s. d.	s. d.
Fir without labour in all kinds of work		
per ft. cube	2 9	—
In bond and plates, &c.	3 3	0 5
In framed work to naked floors, &c. ditto	3 8	0 7
Wrought and framed	4 0	0 10
Wrought, framed, rebated and beaded		
ditto	4 6	1 2
In proper door and window frames ditto	5 6	2 0
English Oak :—		
Oak without labour in all kinds of work		
per ft. cube	6 3	—
In bond, plates or sleepers	7 0	0 6
In framed work	7 6	0 9
Wrought and framed	8 0	1 0
Wrought, framed, rebated and beaded		
ditto	9 6	1 6
Ditto in proper door and window frames		
ditto	10 0	2 6

The prime cost of fir timber is about 40 per cent. cheaper than the average rate quoted for 1826. With regard to current prices for deals, &c., for joiner's work, the author remarks, "from the recent alteration that has taken place in the value of deals, the following calculations are made from

the general assortment used in good work, at the prime cost of £32 per hundred for 12ft. 3 in. deals in the timber yard, and battens of equal description are usually charged at two-thirds of the same, with the cartage, sawing, waste, and profit attached." It will be seen that a similar reduction in the price of deals has taken place as in the case of fir timber already mentioned. The rates for oak timber remain practically the same.

	All materials.	Labour only.
	s. d.	s. d.

	All materials.	Labour only.
	s. d.	s. d.
Bracketing :—		
Bracketing, including plugging, to common cornices or coves, measuring where lathed		
per ft. super.	0 7½	0 3
Centering :—		
Common centering to vaults on three proper lin. ribs with ½ in. deal boarding, fixed with fir bearers, use and waste only	22 0	7 6
Ditto to rough apertures	0 6	0 2½

	All materials.	Labour only.
	s. d.	s. d.
Rough Boarding, &c. :—		
lin. deal rough boarding	27 0	2 6
Ditto edges shot	29 0	3 9
½ in. sound boarding with double fillets	26 0	6 0
lin. battening to walls, 12 in. apart ditto	11 6	3 3
If the stuff is to be sawn out add ditto	1 0	0 9

	All materials.	Labour only.
	s. d.	s. d.
Floors :—		
lin. white deal, wrought and laid folding	38 0	6 0
lin. yellow deal, rough and edges suot	34 0	4 3
lin. ditto wrought and laid folding ditto	40 0	6 3
1½ in. ditto ditto	48 0	7 0
If any of the above are ploughed and tongued add	5 0	2 9
1½ in. yellow battens, straight joint, tongued headings and edge nailed	53 0	13 0
Ditto doweled with oak dowels	60 0	21 0

	All materials.	Labour only.
	s. d.	s. d.
Inch Deal :—		
Rough deal, fixed or fitted, per ft. super.	0 4½	0 1
Ditto edges shot	0 5	0 1½
Wrought one side	0 5½	0 1½
Ditto two sides	0 6½	0 2

	All materials.	Labour only.
	s. d.	s. d.
Skirtings, with backings complete :—		
lin. torus or single moulding skirting	0 8	0 3½
per ft. super.	0 2	0 1
Narrow skirting grounds	0 2	0 1

	All materials.	Labour only.
	s. d.	s. d.
Sash Frames :—		
Deal cased frames, oak sunk sills, deal pulley pieces for 1½ in. sashes, prepared for double hanging with brass-cased sash pulleys	0 8	0 4
Ditto for 2 in. sashes	0 9	0 4½
Plain solid frames, oak sunk sills, weathered, throated, rebated and beaded for 2 in. French casements, quarters 4 in. by 4 in.	0 7½	0 3½

	All materials.	Labour only.
	s. d.	s. d.
Sashes :—		
1½ in. deal ovolo sashes	0 7	0 3
2 in. ditto ditto	0 8	0 3½

	All materials.	Labour only.
	s. d.	s. d.
Doors :—		
lin. deal ledged doors, wrought, ploughed, tongued and beaded	0 11	0 3½
per ft. super.	1 0	0 5½
1½ in. four-panel bead, butt and square	1 0	0 5½
Ditto ditto, moulded and square	1 0	0 5½
2 in. deal framed and braced doors, filled in with lin. deal, ploughed, tongued and beaded boarding	1 6	0 6

PLASTERER'S WORK.

	All materials.	Labour only.
	s. d.	s. d.
Walls :—		
Render one coat	0 5½	0 2
Ditto and set	0 8	0 3
Render float and set	1 0	0 5

	All materials.	Labour only.
	s. d.	s. d.
Ceilings and Partitions :—		
Lath only (single fir lath) per yd. super.	0 7	0 1½
Ditto and plaster one coat	1 2	0 3½
Ditto ditto and set	1 4	0 4½
Lath, plaster, float and set	1 8	0 7
If set with gauged putty add	0 2	0 1
If double lath add on single fir laths	0 6	0 1

	All materials.	Labour only.
	s. d.	s. d.
Cornices :—		
Plain plaster cornices	0 10	0 5½
Limewhiting, &c. :—		
Limewhite once	0 1½	0 1
Ditto twice	0 2	0 1½
Wash, stop and white to new work	0 1½	0 1

	All materials.	Labour only.
	s. d.	s. d.
Wash, stop clearcolle and white to old work	0 3	0 2
Wash, stop and common colour	0 3½	0 2
Portland cement :—		
Plain face on brick, jointed	2 0	0 9

PAINTER'S WORK.

"Common colours, with best white lead or white of zinc."

	All materials.	Labour only.
	s. d.	s. d.
Plain Painting :—		
Once in oil, including knotting	per yd. super.	0 3½
Twice in ditto, including stopping	ditto	0 6
Four times in ditto	ditto	0 10
French green, deep blue, or other superior colours add	ditto	0

	All materials.	Labour only.
	s. d.	s. d.
Skirtings :—		
Plain narrow skirtings, not exceeding 8 in. wide, once in oil	per ft. run	0 0½
Ditto twice	ditto	0 1½
Ditto four times	ditto	0 2½
Ditto exceeding 8 in. wide once in oil	ditto	0 1
Ditto twice	ditto	0 1½
Ditto four times	ditto	0 2½

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PAINTER'S WORK—cont.

Skirtings—cont.	s.	d.
Rainwater pipes and gutters once in oil per ft. run	0	1½
Ditto ditto twice	-	ditto 0 2
Ditto ditto four times	-	ditto 0 3
Sash Frames:—		
Frames once in oil not exceeding 25ft. super.	each	0 8
Ditto twice ditto	-	ditto 1 0
Ditto four times	-	ditto 1 8
For large or Venetian frames add one-third.		
Sash Squares:—		
Sash squares once in oil not exceeding 30in. super.	per dozen	0 8
Ditto twice	-	ditto 1 0
Ditto four times	-	ditto 1 8
If the squares exceed 30in. add 1 for each coat	ditto	0 4
Graining, &c.:—		
Graining oak, oiled and shadowed	per ft. super.	0 2
Varnishing once in best copal	per yd. super.	0 7
Ditto twice ditto	-	ditto 0 11
Writing plain letters	-	per inch 0 0½
Gilding:—		
Gilding in oil gold with plain work	per ft. super.	3 0
Ditto in burnished ditto	-	ditto 4 0
Paperhanging:—		
Hanging lining paper	-	per piece 0 8
Ditto common paper	-	ditto 0 9
Pumicing, sizing and preparing walls	-	ditto 0 6

GLAZIER'S WORK.

Best crown glass in new sashes in squares 1ft. 6in. to 2ft.	per ft. super.	1 0
Thirds ditto	-	ditto 0 9
Crown glass, ground, in squares 1ft. 6in. to 2ft.	-	ditto 1 4
Best polished plate glass and glazed in new sashes 50ft. to 55ft. super.	-	ditto 6 10
Ditto 10ft. to 12ft. super.	-	ditto 4 6

PLUMBER'S WORK.

Milled lead	-	per cwt.	30 0
Ditto cut to sizes	-	ditto	31 0
Ditto in gutters, flats, hips or ridges	-	ditto	34 0
Ditto in step flashings	-	ditto	36 0

Daywork Prices (1859).

LABOUR.

Bricklayer	-	per day	6 0
Labourer	-	ditto	4 0
Mason	-	ditto	6 0
Carpenter or joiner	-	ditto	6 0
Plasterer	-	ditto	6 0
Plumber	-	ditto	6 0

MATERIALS.

Bricks :—			
Place bricks	-	per hundred	3 6
Stock ditto	-	ditto	4 6
Cutters	-	ditto	10 6
Stourbridge firebricks	-	ditto	18 0
Tiles :—			
Pantiles	-	per hundred	10 0
Plain tiles	-	ditto	5 6
Limes, Mortars, &c. :—			
Chalk lime	-	per hundred	13 0
Stone lime	-	ditto	15 6
Mortar	-	per load	18 0
Roman cement	-	per bushel	2 0
Sand	-	per load	6 0
Laths, Hair, &c. :—			
Fir laths (single)	-	per bundle	2 0
Oak laths	-	ditto	5 0
Hair	-	per bushel	1 4
Whiting	-	per dozen	0 4
Deals and Battens :—			
12ft. run of 2½in. battens	-	each	4 2
Ditto 3in. ditto	-	ditto	4 9
12ft. run of 2½in. deals	-	ditto	6 2
Ditto 3in. ditto	-	ditto	7 1
Hardwoods :—			
1in. wainscot	-	per ft. super.	1 0
1in. oak	-	ditto	0 8
1in. Honduras mahogany	-	ditto	1 1
1in. Spanish ditto	-	ditto	2 4
1in. elm	-	ditto	0 4
Ironmongery, &c. :—			
4in. cast-iron butts with screws	-	per pair	1 0
4in. wrought ditto	-	ditto	1 6
18in. cross garnet or hook and eye hinges	-	ditto	1 6
10in. bright rod bolts	-	each	1 6
7in. two bolt locks	-	ditto	3 6
2in. brass sash pulleys	-	ditto	1 3
1in. screws	-	per dozen	0 2
2in. ditto	-	ditto	0 4
4in. ditto	-	ditto	1 0
Glue	-	per lb.	0 8
White sash line	-	per yd. run	0 1½
White lead	-	per lb.	0 6
Solder	-	ditto	0 10
4in. lead pipe (middling)	-	per ft. run	0 5
1in. ditto (ditto)	-	ditto	0 9½
2in. ditto (ditto)	-	ditto	1 11
1in. brass stop cock	-	each	6 6
1in. bib cock	-	ditto	8 0

On comparing the daywork prices of 1859 with those quoted for 1826, it will be seen that materials generally are considerably cheaper.

The following selection of items and prices from Skyring's builders' price-book for 1875 will give some indication of the rates current at that date:—

Skyring's Builders' Prices for 1875.

EXCAVATOR'S WORK.

Digging, &c.:—	All materials.	Labour only.
Digging and throwing out in common foundations not exceeding 6ft. deep	s. d.	s. d.
per yd. cube	0 7	0 6

EXCAVATOR'S WORK—cont.

Digging, &c.:—cont.	All materials.	Labour only.
Digging and throwing out in gravel or stiff clay	s. d.	s. d.
per yd. cube	0 8	0 7
Add if wheeled not exceeding 20yds. ditto	0 2	0 1
For every additional 20yds. add	0 2	0 1
Carting away (not exceeding 1 mile) ditto	2 6	—
Concrete Work:—		
Concrete in proportions of 1 part ground stone lime to 6 parts gravel	ditto	7 6 0 8

The prices for digging have increased slightly since 1859, but the rates for wheeling, &c., remain the same. The prices for lime concrete are also a little higher, but they still seem low (especially the rate for "labour only") as compared with present-day values.

BRICKLAYER'S WORK.

Brickwork:—	All materials.	Labour only.
Place bricks laid dry in wells, &c.	s. d.	s. d.
per rod	12 0 0	1 6 0
Ditto all stocks	13 0 0	1 10 0
Place bricks in party or external walls in mortar	13 0 0	3 5 0
Ditto all stocks	15 0 0	3 5 0
Ditto done in best manner, picked for the outside and jointed, 4 joints not to exceed 1½in. ditto	15 10 0	3 10 0
If done with blue lias lime add	0 10 0	0 4 0
Brickwork in Roman cement, all stocks	18 0 0	4 5 0

It will be observed that the prices quoted for brickwork are considerably higher than in 1859, and on comparing the rates for "labour only" to brickwork a very great difference will be seen in the cost of these items.

Facings:—	All materials.	Labour only.
Picked stock facings, perpendents kept	s. d.	s. d.
per ft. super.	0 5	0 1
Seconds malsms ditto	0 5	0 1
Best ditto ditto	0 5	0 1
Red brick ditto	0 6	0 14
Suffolk white	0 6	0 12
Arches:—		
Rough camber or semi-axed, axed off the soffits and set in mortar for pointing with stocks	per ft. super.	0 6 0 4
Rubbed and gauged camber, scheme, or semi, set in patty with best malms or red bricks	ditto	3 0 0 9
Pointing:—		
Tuck pointing with a bead jointer and perpendents kept in new work	per ft. super.	0 4 0 2
White joint pointing to new fronts ditto	0 3	0 2
If the scaffold has not been removed since the erection of the new building deduct	ditto	0 0½ 0 0½
Tuck pointing to old fronts, including the erection of scaffold, raking out joints, cleaning brickwork with water, and staining the same, the gauged arches to be stopped with cement, coloured, and neatly drawn	ditto	0 6 0 3
Bricknogging:—		
Stock bricks laid edgewise per yd. super.	2 10	0 7
Ditto ditto flat	3 0	1 0
Brick Paving:—		
Common hard stocks, flat in sand	per yd. super.	10 1 0
Ditto on edge	ditto	3 10 0 10
Ditto flat in mortar	ditto	3 6 1 0
Ditto on edge	ditto	4 6 1 0
Ditto flat in cement	ditto	3 11 1 3
Ditto on edge	ditto	5 1 4
Pantiling:—		
Pantiling laid dry to a 10in. gauge	per square	27 0 3 0
Pointing inside only, add	ditto	6 6 4 6
Plain tiling:—		
Plain tiling on double fir laths and wrought nails, showing ¾in. on the face	ditto	17 0 6 6
Ditto on oak laths	ditto	19 0 7 6

The prices of 17s. and 19s. per square for plain tiling, laid complete as described, are obviously printer's errors; for in the same price-book the cost of tiling, including all materials except tiles, is given as 16s. 6d. per square. It is probable that the prices of the foregoing items should read 47s. and 49s. per square respectively.

SLATER'S WORK.

Welch Slating:—	All materials.	Labour only.
Ladies slating and fixed with metal nails	s. d.	s. d.
per square	30 0	6 6
Countess ditto	32 0	6 0
Duchess ditto	33 0	5 6
Add to the above if copper nails are used	ditto	2 0
Westmoreland slating and fixed with copper nails	ditto	63 0 8 6

MASON'S WORK.

Stone:—	All materials.	Labour only.
Portland stone in block, including cartage and waste	s. d.	s. d.
per ft. cube	4 6	—
Painwicks stone in block, without labour, including hoisting, scaffolding and setting	ditto	3 9
Bath ditto ditto and ditto	-	ditto 3 0
Aberdeen granite, including hoisting and setting	ditto	6 6
Devon ditto	-	ditto 5 0
Labour on Stone:—		
Sawing or half plain work	per ft. super.	0 8 0 4
Plain work rubbed to face	-	ditto 1 6 0 8
Sunk work rubbed	-	ditto 1 9 1 0
Labour on Granite:—		
Plain face	per ft. super.	2 9 2 6
Ditto to beds and joints	-	ditto 2 4 1 6
Sunk work, rough	-	ditto 2 8 2 0
Ditto ditto faced	-	ditto 3 9 3 6
Yorkshire Stone Paving:—		
3in. York paving	per ft. super.	1 4
Ditto rubbed	-	ditto 1 8
3in. rubbed landings	-	ditto 2 8
Steps:—		
9in. by 6in. York solid steps (quarry worked)	per ft. run	2 9
12in. by 6in. ditto (ditto)	-	ditto 3 9
Window Sills:—		
8in. by 4in. Portland stone window sills, sunk and throated	per ft. run	3 6
For every ¼in. extra thickness add	-	ditto 0 9
8in. by 3½in. Bath stone window sills, sunk and throated	-	ditto 1 10
For every ¼in. extra thickness add	-	ditto 0 4

CARPENTER'S AND JOINER'S WORK.

Memel Fir:—
"At the prime cost in the timber yard of £4 15s. per load."

Fir without labour in all kinds of work	All materials.	Labour only.
per ft. cube	s. d.	s. d.
In bond and plates, &c.	3 0	—
In framed work to naked floors, &c. ditto	3 9	0 7
Wrought and framed	4 0	0 8
Wrought, framed, rebated and beaded	4 3	0 10
ditto	5 0	1 4
In proper door and window frames ditto	6 0	2 8
English Oak:—		
Oak without labour in all kinds of work	per ft. cube	7 0 —
In bond, plates or sleepers	-	ditto 7 6 0 8
In framed work	-	ditto 8 0 0 11
Wrought and framed	-	ditto 8 6 1 2
Wrought, framed, rebated and beaded	-	ditto 9 6 1 8
Ditto in proper door and window frames	ditto	11 0 2 6

The rates for fir and oak in scantling sizes are slightly higher than those quoted sixteen years previously, the prime cost of fir in log being now taken at £4 15s. as against £4 in 1859. For joiner's work the prices are based on good quality deals at the "prime cost of £32 per hundred for 12ft. 3in. deals in the timber yard" and battens at £21 per hundred, these rates being the same as those current in 1859.

Bracketing:—	All materials.	Labour only.
Bracketing, including plugging, to s. d. s. d.		
common cornices, or coves, measuring where lathed	per ft. super.	0 8 0 3
Centering:—		
Common centering to vaults on three proper lin. ribs with ½in. deal boarding fixed with fir bearers, use and waste only	per square	22 0 7 6
Ditto to rough apertures	per ft. run	0 5 0 2
Rough Boardings, &c.:—		
1in. deal rough boarding	per square	27 0 2 6
Ditto edges shot	ditto	29 0 3 9
¾in. sound boarding with double fillets	ditto	26 0 6 6
1in. battening to walls, 12in. apart ditto	ditto	11 6 3 3
If the stuff is to be sawn out add	ditto	1 2 1 0
Floors:—		
1in. white deal, wrought, and laid folding	per square	33 0 6 0
1in. yellow deal, rough and edges shot	ditto	37 0 2 6
1in. ditto wrought, and laid folding	ditto	35 0 6 3
1½in. ditto ditto	ditto	39 0 6 6
If any of the above are ploughed and tongued add	ditto	5 6 3 0
1½in. yellow battens, straight joint, tongued headings, and edge nailed ditto	49 0	12 6
Ditto doweled with oak dowels	ditto	60 0 20 0

Inch Deal:—	All materials.	Labour only.
Rough deal, fixed or fitted	per ft. super.	0 4½ 0 0½
Ditto edges shot	-	ditto 0 5 0 1
Wrought one side	-	ditto 0 6½ 0 2
Wrought two sides	-	ditto 0 6½ 0 2
Skirtings, including backings and fillets:—		
1in. torus or single moulding skirting	per ft. super.	0 3½ 0 3½
Narrow skirting grounds	per ft. run	0 2 0 1

Sash Frames:—	All materials.	Labour only.
Deal cased frames, oak sunk sills, deal pulley pieces for 1½in. sashes, prepared for double hanging with brass-cased sash pulleys	per ft. super.	0 7½ 0 3½
Ditto for 2in. sashes	ditto	0 8½ 0 4

CARPENTER'S AND JOINER'S WORK—cont.

Sash Frames—cont.	All	Labour
Fir wrought, rebated and beaded with materials. only.	s. d.	s. d.
oak sunk sills, weathered and throated for 2in. French casements, quarters 4in. by 4in.	- - - ditto	0 8 0 4
Sashes:—		
1½in. deal ovolo sashes - per ft. super.	0 7	0 3
2in. ditto - - - - - ditto	0 8	0 3½
Doors:—		
1in. deal ledged doors, wrought, ploughed, tongued and beaded - per ft. super.	0 11	0 4½
1½in. four-panel bead butt and square ditto	0 11	0 5½
Ditto ditto moulded and square - ditto	0 11	0 5½
2in. deal framed and braced doors, filled in with lin. deal ploughed, tongued and beaded boarding - - - ditto	1 7	0 7

PLASTERER'S WORK.

Walls:—		
Render one coat - - per yd. super.	0 6	0 3
Ditto and set - - - - ditto	0 9	0 4
Render, float and set - - - ditto	1 1	0 5½
Ceilings and Partitions:—		
Lath only (single fir laths) per yd. super.	0 8	0 1½
Ditto and plaster one coat - - ditto	1 4	0 5
Ditto ditto and set - - - ditto	1 5	0 5
Lath, plaster, float and set - - ditto	1 10	0 8
If set with gauged putty add - ditto	0 2	0 1
If double lath add on single fir laths ditto	0 6	0 1
Cornices:—		
Plain plaster cornices - - per ft. super.	0 11	0 7
Limewhiting, &c.:—		
Limewhite once - - per yd. super.	0 1½	0 1
Ditto twice - - - - ditto	0 2	0 1½
Wash, stop and white to new work ditto	0 1½	0 1
Wash, stop, clearcolle and white to old work - - - - ditto	0 3	0 2
Wash, stop and common colour - ditto	0 4	0 2
Portland Cement:—		
Plain face on brick, jointed		
per yd. super.	2 0	0 10

(To be continued.)

IN PARLIAMENT.

(By our Press Gallery Representative.)

ON May 4th Mr. Field asked the Chief Secretary for Ireland whether he was aware that dissatisfaction existed respecting the appointment of an English architect to act conjointly with an Irish architect in the erection of the College of Science and Art at Dublin, and whether he could explain why it was necessary to import an architect in view of the fact that competent professional men were available for the work in Ireland. Mr. Victor Cavendish replied that he was not aware of any dissatisfaction on this subject. There was no Irish architect who had any experience in building a college of science or had special knowledge of the intricate technical details which had to be borne in mind in constructing such a building according to modern requirements. Mr. Aston Webb had the greatest knowledge and experience of this class of work.—Mr. John Redmond asked what the hon. member meant by saying that he was not aware of any dissatisfaction when protests had been made by Irish members in the House, and Mr. Mooney wished to know whether he had not seen a copy of the resolution passed by the R.I.A.I. (see below). Mr. Cavendish observed that he knew his attention had been called to the matter, but he was not aware that a resolution had been passed. He added that there was also an Irish architect engaged on the work.—Mr. John Redmond having repeated his question, Mr. Lonsdale, a Unionist Member from Ireland, brought the passage to a close by suggesting that in view of the dissatisfaction that existed the Government should cause the Royal College to be erected in Belfast instead of Dublin.

Dublin College of Science: Protest by R.I.A.I.—The council of the Royal Institute of the Architects of Ireland "strongly deprecate the action of the Government in not entrusting to an Irish architect the designing and carrying out of the proposed buildings of the Royal College of Science; more especially as the Council had placed their views on the matter before the Government by a resolution passed on June 2nd, 1902." (The architects appointed are Mr. Aston Webb, R.A., and Mr. T. Manly Deane.)



THE BUILDING OF HOYLE'S WAREHOUSE, MANCHESTER (Photograph taken on April 29th).
CHARLES HEATHCOTE AND SONS, ARCHITECTS.

HOYLE'S WAREHOUSE, MANCHESTER.

IN publishing the accompanying view, showing the stage reached by April 29th (this being the eighth photograph of the series which we have reproduced week by week), special attention is drawn to the large addition made to the steel framing and flooring. The work in the basement is now complete. The architects desire to point out that recently not only has the steelwork been erected on 5½ days a week, but a gang has been at work at night and some necessary work done on Sundays. The night-work has been resorted to as after commencing the works a lay-by of the canal was taken into the basement, causing delay in proceeding and alterations in the steel and other details, and the time thus lost has had to be caught up. These alterations of site only serve to show further the obligation of organization when buildings must be completed within a specified time, and help to again illustrate the fact that English engineers, contractors and workmen are fully capable of doing all this, which is the sole object of these views and comments.

MODERN SCHOOL VENTILATION.

THE Junior Institution of Engineers recently visited the Cassland Road Higher-Grade Board School, Hackney, to inspect the heating and ventilating systems installed there. A particularly noticeable feature is the process of filtration at the air supply or main intake. A special device in the form of two large drums slowly revolving, on the peripheries of which is a layer of fibrous matting, is provided for this purpose. The drums revolve in water and offer to the impinging air a continuously saturated surface. The friction caused by the fibrous matting through the water, and the water disturbance associated with it, causes the fibres to release the dust, smuts, &c. gathered, and all the sediment thus trapped is passed through the waste pipe to the drain. After being dealt with in this manner, the whole of the air passes through two disc fans driven by an electric motor of 17 b.h.p. The duty of these fans represents the propulsion into the building of something like 20 tons of air per hour, and a commendable and striking

characteristic is the general freedom from draughts. To warm this enormous weight of air a Cornish boiler is employed generating steam at low pressure and feeding a series of heating batteries distributed at the bases of the rising flues to each room, which were noticed in the main air duct. Condensation is all returned to the boiler, but the level of the ground prevents this being done by gravity, and consequently an automatic pump and receiver are in circuit with the heating mains. The heating batteries are each fitted with a local valve, so that, if need be, any of them can be shut out of supply without in any way affecting the other portions. All the batteries consist of gill pipes, and the bolt flanges are all faced and the joints made with asbestos rings. It was noticed that the batteries were complete with dampers or sliding shutters, the object being to give full control over the temperature. By raising or lowering the shutters the air flowing up the flues may be warmed to the maximum degree, or all cold air may be sent forward, half warm and half cold, or any intermediate mixture of each, but without curtailing the actual volume of air in the slightest degree. The control of the temperature rests with the caretaker, who may perform what is required without leaving the basement. In distributing the heating batteries at each vertical flue the concentrated form of heater is avoided, and there is no necessity to heat the air to a high temperature, as is requisite in order to compensate for losses in transmission where a large heating battery is placed at the intake. As a result, the air in these schools retains its freshness and invigorating qualities. Actual tests of the air in the schoolrooms by the medical officer to the Board showed an average of only six parts CO₂ in 10,000 volumes. The average change of air is about eleven times per hour. Messrs. Stott & Co. fitted the installation.

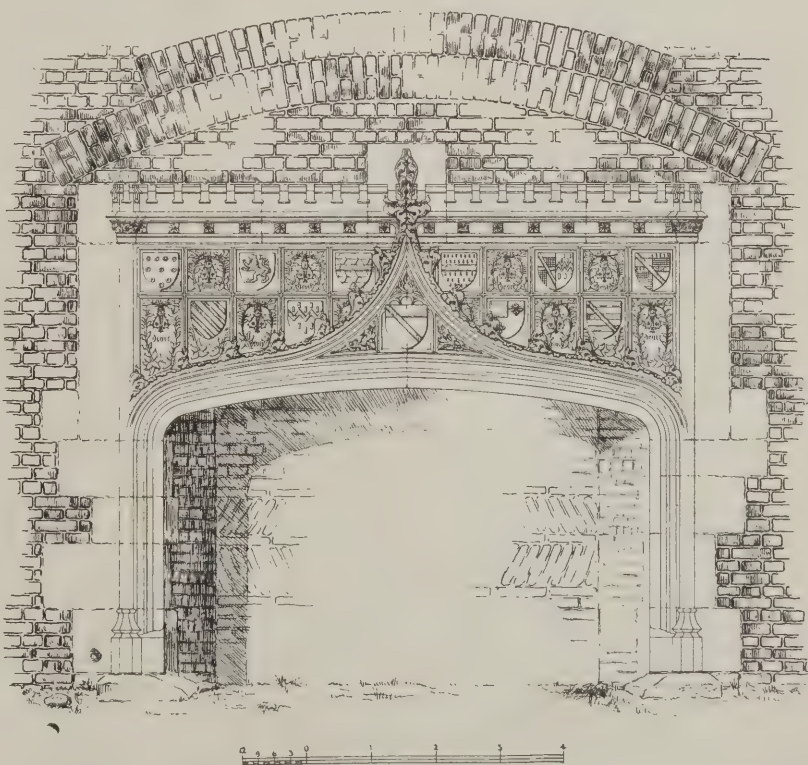
Suggested Imperial Monumental Hall at Westminster.—The drawings of this design by Mr. John P. Seddon and Mr. E. B. Lamb, of which one view was given in our issue for March 30th, can be seen (free) during the season at the Britannia Studio, 11A, Caroline Street, Eaton Square, S.W., from 3 to 5 daily. Other drawings and studies in and about Westminster by the same architects, and drawings and specimens of stained glass for Llandaff Cathedral, &c., by Mr. H. G. Murray, are also on view.

Law Cases.

Ancient Lights: Important Decision by the House of Lords.—The very important case of *Colls v. Home and Colonial Stores, Ltd.*, was decided in the House of Lords on May 2nd. Mr. J. H. Colls pulled down a building 19ft. 6in. high in Worship Street, Finsbury, and erected one 42ft. high. The Home and Colonial Stores complained that this building interfered with the ancient lights of their premises on the opposite side of the street. The question was whether, according to the law of England, the owner of ancient lights is entitled to the whole amount of light which has ever reached his windows, or only such an amount as is sufficient "according to the ordinary notions of mankind." The Court of Appeal accepted the wider interpretation of the right and ordered the building to be pulled down, but the House of Lords has now reversed that judgment.—The Lord Chancellor said that if the broad proposition underlying the judgment of the Court of Appeal were true, it was not a question of 45 degs., but any appreciable diminution of light which had been enjoyed (*i.e.*, had existed uninterruptedly for twenty years) constituted a right of action, and gave to the proprietor of a tenement that had had this enjoyment a right to prevent his neighbour building on his own land. He did not think this was the law. The argument seemed to him to rest upon a false analogy, as though the access to and enjoyment of light constituted a sort of proprietary right in the light itself. "The owner of a tenement on one side of a street 40ft. wide seeks to restrain his opposite neighbour from erecting a room which, when erected, will not then be of the same height as the house belonging to the complaining neighbour, and the only plausible ground on which the complaint rests is that on the ground floor he has a room not built in the ordinary way of rooms in an ordinary dwelling-house, but built so that the long room goes through the whole width of the house to a back wall which has, however, no window at the back or sides, and which was, therefore, at the back of it, too dark for some purposes without the use of artificial light, even before the building on the other side of the street was erected. I think that no tribunal ought to find as a fact that the building is a nuisance; and altogether apart from the inappropriateness of the remedy by injunction, I am of opinion that the plaintiff has no cause of action against the defendant. The test of the right is, I think, whether the obstruction complained of is a nuisance, and, as it appears to me, the value of the test makes the amount of right acquired depend upon the surroundings and circumstances of light coming from other sources, as well as the question of the proximity of the premises complained of. . . . It must be taken that the foundation of this judgment rests upon the finding of fact by Mr. Justice Joyce, that the buildings of the defendant had not so materially interfered with the light previously enjoyed by the plaintiff as to amount to a nuisance. It follows that, in my judgment, the case of *Warren v. Brown* was rightly decided by Mr. Justice Wright, and ought to have been affirmed by the Court of Appeal. It was, however, reversed in accordance with the same views which guided that Court in the case now under review. I have to move that the judgment of the Court of Appeal be reversed and the judgment of Mr. Justice Joyce restored, and that the respondents do pay to the appellant the costs both here and below."—Lord Macnaghten said there seemed to be two divergent views in regard to this matter, neither of which, in his opinion, was absolutely accurate. The extreme view on one side was that the light acquired by so-called statutory prescription was a right to a

continuance of the whole or substantially the whole quantity of light which had come to the windows during a period of twenty years; while the extreme view on the other side was that the right was limited to a sufficient quantity of light for ordinary purposes. "I think this divergence of view comes from a difference of opinion as to the meaning and effect of the provisions of the Prescription Act, 2 & 3 Will. IV., c. 71, and if I am not mistaken it may be traced to certain expressions, not perhaps sufficiently guarded, which are to be found in judgments delivered in this House in the case of *Tapling v. Jones* (11 H.L., 290). In that case Lord Westbury, Lord Cranworth and Lord Chelmsford all assume that a period of twenty years' enjoyment of the access and use of light to a building creates an absolute and indefeasible right immediately on the expiration of the period of twenty years. No doubt section 3 says so in terms, but section 4 must be read in connection with section 3, and if the two sections are read together it will be seen that the period is not a period in gross, but a period next before some suit or action wherein the claim or matter to which such period may relate shall have been or shall be brought into question. Unless and until the claim or matter is thus brought into question no absolute or indefeasible right can arise under the Act." Lord Macnaghten said he had often wondered why the Court did not more frequently avail itself of the power of calling in a competent adviser to report on the question. "There are plenty of experienced surveyors accustomed to deal with large properties in London who might be trusted to make a perfectly fair and impartial report, subject, of course, to examination in Court if required. I am not in the least surprised that the plaintiffs in the present case objected to a report from a disinterested surveyor; but, in my opinion, the Court ought to have obtained such a report for its own guidance With the present case

I may deal very briefly. It cannot be disputed that some diminution of light is caused by the defendant's buildings, but such as it is I think it is exactly what Chief Justice Best described as partial inconvenience rather than serious injury. I am satisfied that if the case had been tried at law before the question was so much embarrassed by the multiplicity of decisions no jury would have given any damages."—Lord Davey said he was of opinion that the finding of Mr. Justice Joyce was borne out by the evidence, and he accepted this finding as the basis of his judgment. "According to both principle and authority, I am of opinion that the owner or occupier of the dominant tenement is entitled to the uninterrupted access through his ancient windows of a quantity of light the measure of which is what is required for the ordinary purposes of inhabitancy or business of the tenement according to the ordinary notions of mankind, and that the question for what purpose he has thought fit to use that light, or the mode in which he finds it convenient to arrange the internal structure of his tenement, does not affect the question. The actual user will neither increase nor diminish the right. The single question in these cases is still what it was in the days of Lord Hardwicke and Lord Eldon, whether the obstruction complained of is a nuisance . . . The experience of surveyors who are practically conversant with this matter is entitled to great respect. As Mr. Vigers states in his evidence, they have adopted a working rule for the purpose of advising those who consult them and settling differences by negotiation. The rule of 45 degs. is not, of course, a rule of law, and is not applicable to every case. But I agree that it may properly be used as *prima facie* evidence. For these reasons I think that the appeal should be allowed and the decree of Mr. Justice Joyce restored, with costs here and below."—Lord Robertson and Lord Lindley gave judgment to the same effect.



FIREPLACE ON GROUND FLOOR AT TATTERSHALL CASTLE. MEASURED AND DRAWN BY IVAN DAUGHTRY.

Tattershall Castle was commenced in 1422, and is considered to be one of the finest specimens of mediæval brickwork in the country. The bricks are 8in. by 4in. by 2in., and the walls, which are reputed to be 15ft. thick in places, are in excellent condition. The fireplaces are the special feature of the interior, and that here shown was taken as a type for those now to be seen in the Houses of Parliament. The drawing is by Mr. Ivan Daughtry, of West Hartlepool.

RUSKIN AND ARCHITECTURE.

Lecture by Professor Capper.

IN connection with the Manchester Ruskin Exhibition, Mr. S. H. Capper, Professor of Architecture at the Victoria University of Manchester, gave a lecture last week on "Ruskin and Architecture" at the Manchester Town Hall. He said that Ruskin's attitude to architecture was a special one, and his interest for architects and influence upon them was partly the goading of somewhat fierce antagonism, partly the more genial stimulus of sympathy and insight. He approached architecture not from the professional side nor from the historical side, but from the æsthetic, the philosophical, and above all from the moral side. In the first place, architecture for him was reached through the sister arts of painting and sculpture. This was, in essence, a fairly common attitude; for most men the ornamental features of a building were its "art," but Ruskin assumed this as a reasoned position deliberately, and everywhere (though most aggressively in the Edinburgh lectures of 1853) pushed it to its extreme logical conclusions. In the second place, Ruskin's attitude to architecture was that of social reformer as well as art crusader. The "Stones of Venice" was written to show how the rise and fall of the Venetian builder's art depended on the moral or immoral temper of the State. There was an absolute right and wrong in art, and what was wrong in art was as wrong as a moral delinquency. Thirdly, Ruskin was pre-eminently the prophet-priest of nature. Nature was right, and the only right. To such a teacher, profoundly convinced of his gospel, yet crying as one in the wilderness, the mocking rejoinder of the Bohemian painter that "nature is very rarely right" artistically, and his graceless talk of "very foolish sunsets," must have seemed not merely unregenerate but blasphemous. Ruskin's teaching, enforced under a literary form that was singularly masterly, could not but strongly influence contemporary architecture. On the whole that influence, if somewhat narrowing in tendency, had been good; his constant appeal to the highest tribunal could not fail in itself to be stimulating, even to those who dissented from the judgment rendered. And Ruskin must always stand for a strongly persuasive influence towards "in everything doing our best." Taking the Pisan-Romanesque architecture as by Ruskin's dictum "amongst the noblest buildings in the world," the lecturer examined Pisa Cathedral from the architect's point of view and in the light of Ruskin's criticisms, illustrating the building and criticizing the criticisms, so as to understand the strength and weakness of Ruskin's position. The doctrine that "architecture is ornament" was considered from the architect's point of view necessarily antagonistic; to an architect it was obviously false to define architecture as (in Ruskin's words) "merely the art of designing sculpture for a particular place and placing it there on the best principles of building"; and Ruskin himself admitted the architect's view in defining "dominion" as an intellectual power of architecture depending "for its dignity upon arrangement and government received from human mind." The obvious fallacies, also, due to the strenuous nature-cult of Ruskin's mind; the strained and equivocal analogies; above all, the perpetual reference of the pointed arch to leaf-forms, and the like, were touched upon and illustrated, while the extraordinary beauty of Ruskin's poetic sympathy with nature in all her moods was fully recognized. Ruskin's moral earnestness and high social ideals, however stimulating and ennobling in themselves when reserved for their proper place, became a source of weak-

ness when urged irrelevantly in art, as when the right use of iron in construction was seriously discussed in the light of a phrase in the Book of Jeremiah. But the moral earnestness was at bottom the source of much of Ruskin's best influence, and one could not but be endlessly grateful for the eloquent sympathetic insight with which he urged so constantly the ennoblement of the handicraftsman and art-toiler.

Enquiries Answered.

The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

The Orders.

REIGATE.—H. J. W. writes: "(1) What proportion does the entablature of the Greek and Roman Orders bear to the column of each Order? (2) What is a pagan basilica?"

(1) See Spiers's "Orders," price 10s. 6d. post free from our offices. (2) A basilica erected in pagan times. You will find plenty of examples in books on the history of Roman architecture.

Vegetation on Stonework.

SIDMOUTH.—WEST writes: "A house now in course of construction, with Beer-stone facings, is surrounded by trees, which have turned the stonework very green. Could some solution be applied that would prevent the vegetation re-forming without discolouring the stone?"

The trouble is caused by vegetation forming by reason of the stone being continually damp, owing to the trees sheltering the house from winds and the sun. We can only suggest the use of one of the well-known stone preservatives to fill up some of the pores, and so prevent so much moisture entering the stone, also giving fewer lodgments for vegetation.

Fungus in Floor.

NEWPORT.—ALPHA writes: "Kindly suggest a remedy for fungus growing under the floor of a room. Three years ago it appeared in the form of a growth which rotted the boards and joists. These were then entirely removed, and the diseased wood cleared out, but the fungus has again appeared and I have had the floor removed once more and fresh joists and boarding laid, the fungus growth being entirely removed."

The fungus growth is due to damp and want of ventilation; the proper course to pursue is to well ventilate the floor, and prevent damp rising by concreting the ground under to a depth of 6in. The joists might also be tarred and creosoted.

Fees for Unexecuted Work.

NUNEATON.—E. E. S. writes: "I prepared a number of schemes for a parish hall and was instructed to take off quantities and procure tenders for the work after having the plans approved by the local authorities. This I did, and the lowest tender came to £648. After some months' delay the committee found they could not raise the necessary money, and wrote asking me what my fees would be. I charged 3 per cent. on the lowest tender and 2 per cent. for quantities. This was considered excessive, as the committee then said I was told not to let the proposed building cost more than £500. Before procuring tenders I told the committee my estimate was £700, and when the chairman said that £500 was the limit they could go to I suggested that I should draw out a scheme that would come within that figure. This I did and sent to him. Now I find that they have ignored my plans

altogether and are going to erect an iron building, and they refuse to pay my account. Is my charge excessive?"

You appear to be perfectly reasonable in your charges, which are in agreement with the R.I.B.A. schedule (see "Specification" No. 7). Consult a solicitor and sue the committee. The mere fact of the cost exceeding what they expected is no excuse for not paying your fees, as they agreed to the plans. If their requirements are too expensive it is not your fault.

Damp Walls.

HULL.—E. F. writes: "I shall be glad if you can suggest a satisfactory method of dealing with damp walls. I have a small building to alter, the north wall of which is 14in. thick and the remaining walls 9in. The present place is very old, and I think it quite probable that it has been built without a damp-course. The old plaster is to be stripped and the walls re-plastered. The outside walls will be succoed."

You should dig down to the foundations inside the rooms and out, dry the walls with coke fires, and put on vertical coatings of asphalt or building composition up to the underside of joists. Then concrete under the floor to a depth of 6in., well ventilate the floors, and replaster. The outside stucco should be of cement and sand, proportion 1 to 2, with surface left from the trowel.

Municipal Engineers; Building Inspectors.

BIRMINGHAM.—A. H. writes: "(1) Where can I obtain particulars of the Municipal and County Engineers' Examinations? (2) What course do you recommend for a student in building construction to obtain a post of building inspector, and eventually to obtain an assistant surveyorship?"

(1) The secretary of the Association of Municipal and County Engineers is Mr. Thomas Cole, 11, Victoria Street, Westminster, and you can obtain particulars from him. (2) You should go in for the examination of the above institution, and study local by-laws, building Acts, &c., and the law on the subject. You would do well also to obtain the certificate of the Sanitary Institute, the Carpenters' Company or the Institute of Sanitary Engineers—the first for preference—and South Kensington certificates in building construction.

Correspondence.

Old Buildings near Manchester.

To the Editor of THE BUILDERS' JOURNAL.

78, CROSS STREET, MANCHESTER.

SIR,—The Manchester Society of Architects is endeavouring to compile a complete list of all old buildings within an area 70 miles square surrounding Manchester which may be worthy of the attention of architects, and to include very brief notes of their character, date and comparative importance, with a map to show their positions. Such a list should, we think, be of considerable value to architects, both to those living in the district and also to visitors, so that we feel justified in asking for some outside assistance in the extensive work of collecting information.

We have printed a preliminary list containing slight notes on about 350 buildings, and we hope that some of your readers may be willing to co-operate with us in making the list more useful to architects; either by correcting errors in the present list, amplifying the notes (which are at present far too crude in most cases), suggesting additions, or giving photographs or reproductions of drawings of the buildings for our Library Reference Portfolio. To anyone willing to take even a very small share in the work we shall be glad to forward a copy of the preliminary list.—For Map Sub-committee,

ALFRED E. CORBETT, Editor.

Trade and Craft.

Manchester's Huge Hotel.

The Midland Hotel at Manchester, to which we devoted an article some time ago, is remarkable on account of the rapidity of its construction and the magnitude of the undertaking. It was a job to try the resources of every firm engaged, and especially so in the materials constituting its main fabric. The steelwork was very important, rivalling the steel-framed structures of the United States, but the brick and faience work constituted the chief portion and was first in importance. The firm which supplied these materials with such rapidity showed itself a great organization in the building trade, and is worthy of much praise. The Burmantofts works of the Leeds Fireclay Company, Ltd., have by this feat achieved an enviable reputation for despatch and quality. This firm has just issued a superbly produced pamphlet giving exterior and interior illustrations from photographs of their Burmantofts faience and "Vitreous Glazed" terra-cotta in the Hotel. We quote the following interesting paragraphs from the description:—"Terra-cotta lends itself admirably to a building constructed largely of steel, as it can be jointed and prepared to suit its position without trouble to the contractor, and large and expeditious delivery can be made, as instanced on this particular building. It may be of interest to mention, especially to those who have buildings to erect where time is of great importance, that the terra-cotta for the new Midland Hotel was delivered at the rate of from 5,000 to 8,000 cub. ft. per month." Each illustration is mounted on thick dark green paper, and the whole enclosed in a neat cover; it forms a very useful and interesting record of a notable building. The firm's London office is 16, Charterhouse Street, E.C.

Builders' Notes.

The Middlesbrough Bricklayers are out on strike against the employers' proposed reduction of 1d. per hour. About sixty men are affected.

At Cork the masons and bricklayers have asked for an increased wage, and the request has been refused by the Master-Builders' Association. A strike has followed.

The Extensions to the Workhouse Infirmary, Walsall, are being warmed and ventilated by means of Shorland's patent Manchester stoves with descending smoke flues, those previously supplied having proved very satisfactory.

The Sanitary Institute.—One of the special features of the Health Exhibition of the Sanitary Institute to be held at Glasgow next July will be a municipal exhibit arranged by the different departments of the Glasgow Corporation. Amongst other things, the Cleansing Department propose to arrange for exhibits of a model up-to-date destructor and the Globe fertilizer; the Gas and Electric Departments the latest developments in illumination; and the Sewage Departments articles from what were formerly waste products.

Fire Tests.—On Wednesday last, at the British Fire Prevention Committee's testing station, Bayswater, two fire-resisting partitions by Mr. Jabez Thompson, of Northwich—one of slabs and the other of porous bricks—were tested. The record for such divisions was beaten by Mr. Thompson's "Brickwood" partition, which withstood a severe fire-test up to 2,100 degs. Fahr. for four hours, followed by the application of water for five minutes from a steam fire-engine. The slab partition test was for 1½ hours up to 1,800 degs. Fahr., followed

by two minutes' stream of water. The sub-committee in charge of the tests comprised Messrs. Marsland, Dicksee & Grellier (district surveyors), Mr. Max Clarke, A.R.I.B.A., Mr. Langridge (insurance surveyor) and Chief Officer Dyer, of the National Fire-Brigade Union.

Keystones.

Rowley Regis Parish Church is to be rebuilt with bricks, not with Rowley rag, as first proposed.

Change of Address.—Mr. Samuel T. Nunn, quantity surveyor, has removed to 108, High Road, Willesden Green, N.W.

"The Cottancin System of Armoured Construction."—The reference made in line 28 of the third column on p. 196 of our issue for April 27th, when this article was published, should be to Fig. 2, not to Fig. 9.

Mr. Henry L. Florence, F.R.I.B.A., for the seventh year in succession has been re-appointed to the office of Grand Superintendent of Works by H.R.H. the Duke of Connaught, Grand Master.

A new Wesleyan Church at Peverell Park, Plymouth, is being built from designs by Mr. H. J. Snell. It will seat about 600 people, and will cost about £4,500. Messrs. A. R. Lethbridge & Son are the builders.

A new Roman Catholic Church at Springfield, Wigan, has just been erected. Mr. Matthew Honan, A.R.I.B.A., of Liverpool, was the architect, and Messrs. J. Howard & Sons, of Wigan, were the builders.

A Grinling Gibbons Room.—The Metropolitan Water Board has decided to purchase a portion of the premises of the New River Company in Rosebery Avenue at a cost of £9,500. Of this amount £2,000 is to be paid in respect of the "Oak Room," very richly carved by Grinling Gibbons.

The Institute of Sanitary Engineers recently visited Guy's Hospital. Founded in 1724, it was enlarged by a wing in 1738 and by another about thirty years later. Many other additions and structural alterations have been made, among the most recent being the dental school, residential college, laundry and central power station.

New Baths at Derby, in Reginald Street, have been erected from the designs of Mr. John Ward, M.I.C.E., borough surveyor and waterworks engineer, assisted by Mr. Widows, his architectural assistant, and Mr. Gardner, clerk of works. Mr. Henry Chattle was the contractor for the building, and Jerram & Co. for the engineering work.

The new Lock at Teddington—the largest on the Thames—is to be formally opened on June 11th. It has been under construction since March, 1901, and has cost £28,000. The length is 650ft. and the width 25ft. A centre gate divides the lock into two, respectively 380ft. and 270ft. long. The walls and inverts are of Portland-cement concrete and the sills, groins and copings of granite.

Discoveries in a Lincolnshire Church.—At the parish church of Toynton All Saints', near Spilsby, upon the removal of the white-washed plaster, &c., while carrying out the restoration, the south wall revealed an arcade of three bays, erected apparently in the fourteenth century. Two of the three arches are quite perfect, but one has been cut away in order that a window might be inserted to give light to a gallery at the west end. In the north wall four bays, dating back probably to A.D. 1150, have been found. There is no doubt that these interesting discoveries are of Saxon origin.

Code for Engineering Standards.—Mr. Robert Atkinson has arranged for the compilation of a comprehensive British engineering standards telegraphic code. The first volume, which has just been published at

Salisbury House, London Wall, price 21s. nett, contains the findings of the Engineering Standards Committee in so far as they deal with rolled sections and tramway rails, carefully and systematically coded. One of the most important features is the directory giving the various sizes which are stocked by each of the leading firms in this country, and for which they keep rolls. This will be of great value to merchants and others in the Colonies.

Current Market Prices

		£ s. d.		£ s. d.	
FORAGE.					
Beans	per qr.	1	14	0	2 0 0
Clover, best	per load	4	0	0	4 7 6
Hay, good. . . .	do.	3	12	6	4 0 0
Sainfoin mixture ..	do.	3	12	6	4 2 6
Straw	do.	1	12	0	2 2 0
OILS AND PAINTS.					
Castor Oil, French ..	per cwt.	1	0	5	—
Colza Oil, English ..	do.	1	1	3	—
Copperas	per ton	2	0	0	—
Lard Oil	per cwt.	2	15	0	2 17 0
Lead, white, ground, car-	do.	1	4	10	—
bonate	do.	1	0	4½	—
Do. red	do.	0	14	7½	—
Linseed Oil, barrels ..	per gal.	0	0	6½	0 0 6½
Petroleum, American ..	do.	0	0	5½	0 0 0
Do. Russian	do.	0	0	8	—
Pitch	per barrel	11	2	0	—
Shellac, orange	per cwt.	3	2	6	3 5 0
Soda, crystals	per ton	1	3	6	1 4 0
Tallow, Town	per barrel	1	1	6	—
Tar, Stockholm	per cwt.	2	2	1½	—
Turpentine	per cwt.	2	2	1½	—
METALS.					
Copper, sheet, strong ..	per ton	74	0	0	—
Iron, Staffs, bar. . .	do.	5	15	0	8 10 0
Do. Galvanised Corru-	do.	10	5	0	10 10 0
gated sheet	do.	11	18	9	12 0 0
Lead, pig, Soft Foreign..	do.	12	5	0	—
Do. do. English common	do.	14	0	0	—
brands	do.	15	0	0	—
Do. sheet English 3lb. per	do.	12	5	0	—
sq. ft. and upwards ..	do.	14	0	0	—
Do. pipe	do.	15	0	0	—
Nails, cut, clasp, 3in. to 6in.	do.	9	5	0	—
Do. floor brads	do.	9	0	0	—
Steel, Staffs, Girders and	do.	5	10	0	6 5 0
Angles	do.	6	0	0	6 5 0
Do. do. Mild bars	do.	127	7	6	127 17 6
Tin, Foreign	do.	128	0	0	130 0 0
Do. English ingots	do.	24	10	0	—
Zinc, sheets, Silesian ..	do.	25	0	0	—
Do. do. Vieille Montaigne	do.	22	5	0	22 15 0
Do. Spelter	do.	22	5	0	22 15 0
TIMBER.					
SOFT WOODS.					
Fir, Dantzic and Memel ..	per load	1	13	0	3 0 0
Pine, Quebec, Yellow ..	do.	5	5	0	6 5 0
Do. Pitch	do.	2	5	0	3 0 0
Laths, log, Dantzic ..	per fath.	4	10	0	5 10 0
Do. Norrköping	per bundle	0	0	7½	—
Deals, Archangel, Yell., 1st,	3 x 9 per std.	19	0	0	—
Do. do. do. 2nd,	3 x 8	12	5	—	—
Do. do. do. 3rd,	3 x 8	10	5	0	—
Do. Petschora, Yell., 3rd,	3 x 9	11	10	0	—
Do. do. White, 3rd,	3 x 9	8	15	0	—
Do. Ljusne, Yellow, 3rd,	3 x 9	16	5	0	—
Do. Blankaholm, Yellow,	2nd, 4 x 9	11	0	0	—
Do. Sandvik, Yellow, 1st,	3 x 9	10	15	0	—
Do. Lulea, Yellow, 2nd,	4 x 11	9	0	0	—
Do. St. Petersburg, Yell.,	1st, 3 x 7	8	15	0	13 5 0
Do. do. 2nd, 3 x 11	do.	10	5	0	—
Do. St. John's Spruce,	1st, 2nd and 3rd,	8	5	0	—
3 x 9 x 12ft to 20ft. . .	do.	6	5	0	12 5 0
Battens, all kinds	do.	6	10	0	9 15 0
Scantlings	do.	0	0	6	0 12 6
Flooring Boards in. pre-	per square	0	0	6	0 8 3
pared, 1st	do.	0	8	0	0 9 9
Do. 2nd	do.	0	8	0	0 8 3
Do. 3rd, &c.	do.	0	8	0	0 8 3
HARD WOODS.					
Ash, Quebec	per load	3	12	6	—
Birch, Miramichi, Planks,	3 x 5 to 16in.	0	0	11½	—
Box, Turkey	per ton	15	0	0	20 0 0
Cedar, Cuba	per ft. sup.	0	0	3½	—
Do. Honduras	do.	0	0	4	—
Do. Tobasco	do.	0	0	5½	—
Elm, Quebec	per load	4	2	6	—
Mahogany, Average Price	per ft. sup.	0	0	5½	—
for Cargo, Honduras ..	do.	0	0	3½	—
Do. African	do.	0	0	3½	—
Do. St. Domingo	do.	0	0	4½	—
Do. Cuba	do.	0	0	4½	—
Do. Lagos	do.	0	0	3½	—
Do. Benin	do.	0	0	3½	—
Do. Tobasco	do.	0	0	5½	—
Oak, Libau, Crown	per load	2	15	0	—
Wainscot logs	do.	3	7	0	—
Do. Fiome round logs ..	do.	4	10	0	—
Do. Quebec	do.	4	10	0	—

Complete List of Contractions Open.

DATE OF DELIVERY		WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
BUILDING:				
May	12	Tannochside, Scotland—Building	District Committee	Crouch & Hogg, 63 Bothwell Street, Glasgow.
"	12	Liverpool—Sorting Office	Commissioners of H.M. Works, &c.	Mr. Cropper, H.M. Office of Works, Liverpool.
"	12	Elgin—House, &c.	—	C. C. Doig, Architect, Elgin.
"	12	Landkey, near Barnstaple—Rebuilding	—	J. C. Southcombe, Architect, Barnstaple.
"	12	Ulverston—House	C. J. Chapman	Settle & Brundrit, Architects, Ulverston.
"	12	Portishead, Bristol—Two Timber Sheds	Docks Committee	W. W. Squire, Engineer, Cumberland Road, Bristol.
"	13	Pentre—Alterations, &c., to Bank Buildings	Rhondda U.D.C.	W. J. Jones, Engineer, Public Offices, Pentre, Rhondda.
"	13	Newry—Two Consumptive Shelters	Guardians	W. R. Bell, Clerk, Workhouse, Newry.
"	13	Annan, Scotland—Library	Town Council	M. Little, Town Clerk, Town Hall, Annan.
"	13	Barnacre, near Garstang, Lancs—Church	—	Austin & Paley, Architects, Lancaster.
"	13	Dewsbury—Seven Houses	—	J. Kirk & Sons, Architects, Dewsbury.
"	13	Fernoy, Ireland—Schools	—	S. F. Haynes, 21, South Mall, Cork.
"	13	Rotherham—Hospital, &c.	Corporation	J. Platts, County Borough Architect, High Street, Rotherham.
"	14	Totland Bay, Isle of Wight—Enlargement and Alterations of Church.	Corporation	Mayston & Eddison, 7 Great James Street, Bedford Row, W.C.
"	14	London, N.—Alterations, &c., to Fire Station	Finchley U.D.C.	Surveyor, Council Offices, Church End, Finchley.
"	14	Risca, Wales—Twelve Houses	Rees & Case	C. T. Evans, 8 Queen Street, Cardiff.
"	16	Abergavenny—Four Cottages	Mrs. Dodd	F. Baldwin, 13 Frogmore Street, Abergavenny.
"	16	Ferryhill, Durham—Rebuilding of the "Black Bull" Inn	—	S. Wilkinson, 30 Mosley Street, Newcastle-on-Tyne.
"	16	Leeds—Urinals, &c.	Corporation	City Engineer, Leeds.
"	16	Loughborough, Leics—Offices	Guardians	W. T. Hampson, Architect, Ashby Road, Loughborough.
"	16	Manchester—Lavatories	Sanitary Committee	City Surveyor, Town Hall, Manchester.
"	16	Ripon, Yorks—Baths	Corporation	S. Stead, Architect, Victoria Chambers, James Street, Harrogate.
"	16	Rishworth, Yorks—Twelve Houses	—	R. Horsfall & Son, 22A Commercial Street, Halifax.
"	16	Sutton Coldfield—Town Hall and Fire Station	—	P. Stone, Architect, Newport, Isle of Wight.
"	16	Wetheral, Cumberland—Offices	Parish Council	J. H. Martindale, Architect, Viaduct Chambers, Carlisle.
"	16	Shrewsbury—Additions, &c.	—	W. C. Eddowes, Borough Surveyor, The Square, Shrewsbury.
"	16	Beaufort, Cardiff—Out-Buildings at Hospital	Ebbw Vale U.D.C.	F. J. Thomas, Town Surveyor, Ebbw Vale.
"	17	Hayle—Farm Buildings	—	S. Lawley, Helnoweth, Gulval, Penzance.
"	17	Bromley—Chapel	Burial Board	E. Hellicar, Architect, Burial Board Offices, East Street, Bromley.
"	18	Farnham—Fire Stairs	Guardians	Friend & Lloyd, Architects, Grosvenor Road, Aldershot.
"	18	London, S.W.—Repairs, &c.	Guardians of St. George's	W. H. Chappell, Clerk, Workhouse, Fulham Road, S.W.
"	19	Quadrant, near Spalding—Villa and Farm Buildings	T. S. Betts	H. Kidd, Kirtan, near Boston.
"	19	Wareham—Three Cottages	G. M. Marston	W. W. Fookes, Architect, North Street, Wareham.
"	19	Preston—County Court Offices	Commissioners of H.M. Works, &c.	Secretary, H.M. Office of Works, &c., Storey's Gate, London, S.W.
"	20	Cranleigh, Surrey—Mortuary	Parish Council	F. W. Smith, Clerk, Brookdene, Cranleigh.
"	21	Cerne, Dorset—Repairs, &c.	Guardians	F. Feacey, Surveyor, South Walks, Dorchester.
"	21	Sligo—Galvanized Iron House	Rural District Council	M. F. Conlon, Clerk, Courthouse, Sligo.
"	23	Chelmsford—Workshops and Gymnasium at School	Essex Industrial Sch. Committee	F. Whitmore, 17 Duke Street, Chelmsford.
"	26	Newburn-on-Tyne—Hospital	Joint Hospital Committee	T. Gregory, Architect, Newburn-on-Tyne.
ENGINEERING:				
May	12	Edinburgh—Widening Bridge	Trustees	W. A. Tait, 72A George Street, Edinburgh.
"	12	Weston Hills—Reservoir, &c.	First Garden City Ltd.	G. R. Strachan, 7 Victoria Street, Westminster, London, S.W.
"	12	Salen, Mull—Pier, &c.	Pier Co., Ltd.	J. Deas, 53 Bothwell Street, Glasgow.
"	12	Writtle, Essex—Waterworks	Rural District Council	J. Taylor, Sons & S. Crimp, 27 Great George Street, Westminster.
"	13	Wivelscombe Somerset—Waterworks	Urban District Council	T. V. Pearce, Clerk, Wivelscombe.
"	13	Stoke-upon-Trent—Meters, &c.	Corporation	P. J. S. Tiddeman, Field Place, Stoke-upon-Trent.
"	13	Maldenhead—Weighbridge	Corporation	C. O. Milton, Electrical Engineer, Power Station, Maldenhead.
"	13	Southampton—Softening Plant	Corporation	Waterworks Engineer, 18 and 19 French Street, Southampton.
"	14	Birkenhead—Extensions to Feeder, &c.	Corporation	W. Bates, Craven Street, Birkenhead.
"	14	Canterbury—Cable	Lighting Committee	Engineer, Electricity Works, Canterbury.
"	14	Droitwich—Sewage Outfall Works, &c.	Corporation	H. Hulse, Borough Engineer, Droitwich.
"	14	Burslem—Electric Plant	Corporation	A. Bremner, Borough Electrical Engineer, Market Bldgs., Burslem.
"	14	Gills Haven, Caithness, N.B.—Pier	County Council	E. K. Carmichael, 8 North Bank Street, Edinburgh.
"	15	London, W.—Wiring	Acton Urban District Council	W. H. Trenham, 39 Victoria Street, Westminster, S.W.
"	16	Bristol—Alternator	Electrical Committee	H. F. Proctor, City Electrical Engineer, Temple Backs, Bristol.
"	16	Wimbledon—Ejector, &c.	Urban District Council	C. H. Cooper, Engineer, Council Offices, The Broadway, Wimbledon.
"	16	Neath, Wales—Electric Mains	Corporation	D. M. Jenkins, Borough Engineer, Gwyn Hall, Neath.
"	16	Salford—Cars	Tramways Committee	E. Hatton, 32 Blackfriars Street, Salford.
"	16	Sheffield—Heating Apparatus	Education Committee	H. J. Potter, 115 Norfolk Street, Sheffield.
"	17	Devonport—Water-Gas Plant	Corporation	Stevenson & Burstal, 35 Parliament Street, Westminster.
"	17	Kilmarnock—Electric Plant	Metropolitan Asylums Board	W. T. Hatch, Engineer-in-Chief, Board's Offices, Embankment, E.C.
"	17	London, S.E.—Switchgear	Corporation	Kennedy & Jenkin, 17 Victoria Street, Westminster, S.W.
"	17	Greenwich—Water Tube Boilers	London County Council	Tramway Offices, 303 Camberwell New Road, S.E.
"	18	Stretford, Manchester—Generator	London County Council	County Hall, Spring Gardens, S.W.
"	18	London, W.—Electric Plant	Electricity Committee	T. L. Miller, 19 Brazennose Street, Manchester.
"	18	London, N.E. and S.W.—22 Iron Fire-Escape Staircases	Hammersmith Borough Council	G. G. Bell, 57 Fulham Palace Road, W.
"	20	Ayr, Scotland—Electric Plant	Metropolitan Asylums Board	T. D. Mann, Clerk, Board's Offices, Embankment, E.C.
"	23	Glasgow—Electric Wharf Cranes	District Lunacy Board	W. M. Stewart, 55 West Regent Street, Glasgow.
"	24	London, N.—Pumping Machinery, &c.	Trustees	G. H. Baxter, 16 Robertson Street, Glasgow.
"	24	Abergavenny—Electric Lighting Schemes	Tottenham and Wood Green Joint Drainage Committee	W. H. Prescott, 712 High Road, Tottenham.
"	25	Manchester—Electric Cranes	Asylum Building Committee	J. Glendinning, Medical Superintendent, Abergavenny.
"	26	London, N.E.—Electricity Supply Mains	Dock and Warehouse Extension Co., Ltd.	W. H. Hunter, 41 Spring Gardens, Manchester.
June	1	Canterbury—Electrical Plant	Hackney Borough Council	R. Hammond, 61 Victoria Street, Westminster, S.W.
"	1	Canterbury—Electrical Plant	Lighting Committee	R. Hammond, 64 Victoria Street, Westminster, S.W.
IRON AND STEEL				
May	14	Aberdeen—Coal Bunkers	Electric Lighting Committee	J. A. Bell, City Electrical Engineer, Corporation Electricity Works, Millburn Street, Aberdeen.
"	14	Sheffield—Fencing, &c.	Improvement Committee	C. F. Wike, City Surveyor, Town Hall, Sheffield.
"	16	Salford—Cars	Tramways Committee	E. Hatton, 32 Blackfriars Street, Salford.
"	17	Bromley, Kent—Entrance Gates, &c.	Burial Board	Borough Engineer, Municipal Offices, Bromley.
"	20	Walthamstow—Tramcars	Urban District Council	J. Enright, 65 Lincoln's Inn Fields, London, W.C.
PAINTING AND PLUMBING:				
May	13	Ashton-under-Lyne—Cleaning, Painting, &c.	—	George & Son, 7 Warrington Street, Ashton-under-Lyne.
"	13	Rochdale—Painting	Health Committee	S. S. Platt, Borough Surveyor, Town Hall, Rochdale.
"	14	Macclesfield—Painting	Gas Committee	Mr. Newbigging, Engineer, Gasworks, Macclesfield.
"	16	St. Marylebone—Painting, &c.	Guardians	H. I. Dudman, Clerk, Guardians' Offices, Northumberland Street, Marylebone Road, W.
"	16	Aberdare—Paints and Oils	Powell Duffryn Steam Coal Co	Stores manager, Aberdare Offices, near Aberdare.
"	16	Cerne, Dorset—Painting, &c., at Workhouse	Guardians	J. Feacey, Surveyor, South Walks, Dorchester.
"	16	London, W.—Whitewashing and Cleaning at Asylum	Central London Sick Asylum	F. W. Bailey, Cleveland Street Asylum, Cleveland Street, W.
"	18	London, S.W.—Painting, &c.	Guardians	W. H. Chappell, Clerk, St. George's, Hanover Square Hall, Mount Street, W.
"	18	Barrow-in-Furness—Painting, &c.	Corporation	Manager, Gasworks, Barrow-in-Furness.
ROADS AND CARTAGE:				
May	13	Castle Donnington, Leicester—Materials	Rural District Council	F. E. Burton, Clerk, High Street, Castle Donnington.
"	14	Reigate—Improvement Works	Town Council	Borough Surveyor, Municipal Buildings, Reigate.
"	14	Rotherham—Paving, &c.	Highways Committee	Borough Surveyor, Frederick Street, Rotherham.
"	16	Stamford—Road making	Corporation	F. R. Ryman, 8 St. Mary's Street, Stamford.
"	17	London, E.C.—Paving Works	Corporation	Town Clerk, Guildhall, E.C.
"	17	Brentford—Broken Granite	Urban District Council	N. Parr, Surveyor, Clifton House, Boston Road, Brentford.
"	18	Cradley Heath, Staffs.—Reinstating Carriageway	Urban District Council	Clerk, Council Offices, Old Hill, Staffordshire.
"	18	Fulham—Making-up (two contracts)	Borough Council	F. Wood, Borough Surveyor, Town Hall, Fulham, S.W.
"	21	Rugby—Sewer	Urban District Council	D. G. Macdonald, Surveyor, Rugby.
"	23	Stevenage, Herts—Granite	Urban District Council	W. O. Times, Clerk, Stevenage.
"	23	Ince, near Wigan—Granite Setts	Urban District Council	A. T. Swain, Surveyor, Council Offices, Green Lane, Ince.

Complete List of Contracts Open — continued.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
SANITARY:			
May 12	Litchfield—Sewerage Works	Rural District Council	C. O. Rawstron, 20 Walsall Road, Lichfield.
" 13	Bexley, Kent—Sewer, &c.	Urban District Council	A. Williams & Son, 14 Victoria Street, Westminster, S.W.
" 14	Droitwich—Sewage Outfall Works, &c.	Corporation	H. Hulse, Borough Engineer Droitwich.
" 17	Glasgow—Sewers, &c.	Stirlingshire County Council ..	Kyle & Frew, 216 West George Street, Glasgow.
June 4	Brandon Colliery and Littleburn, Durham—Sewer, &c. ..	U.D.C.	J. E. Parker, Post Office Chambers, Newcastle-on-Tyne.

List of Competitions Open.

DATE OF DELIVERY	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	DEPOSIT REQUIRED FOR CONDITIONS, &c.	BY WHOM ADVERTISED.
May 16	Dungarvan, Ireland—Water-supply Scheme	£25, £15, £10.	£1 IS.	T. McCarthy, Town Clerk, U.D.C. Office, Dungarvan.
" 31	Stamford, Lincs—Public Library	£10	—	C. Atter, Town Clerk, Town Hall, Stamford.
" 31	New Somerby, Grantham—Church	£10	—	Rev. H. H. Surgey, Dudley Road, Grantham.
" 31	Grantham—Church	£10.	—	H. H. Surgey, Dudley Road, Grantham.
" 31	Liverpool—Church	—	—	Hon. Secretary, 7 Chevin Road, Liverpool.
June 30	Peterborough—Library	£50, £25, £15.	£1	W. Mellows, Town Clerk, Peterborough.
July 2	Bury St Edmunds—Alterations to Shire Hall ..	£50 £30, £20.	£1	A. A. Hunt, County Architect, Sudbury, Suffolk

Tenders.

Information from accredited sources should be sent to "The Editor" at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Addressed postcards on which lists of tenders may be stated will be sent post free on application to the Manager, BUILDERS' JOURNAL, 6, Great New Street, Fetter Lane, E.C.

Abercarn.—For the erection of English Baptist Sunday school at Abercarn. Mr. R. L. Roberts, architect, The Firs, West End, Abercarn:—

Leadbetter Brothers	£1,500 0 0
C. Lock	1,489 10 0
J. Matthias	1,460 0 0
E. C. Jordan	1,382 0 0
D. W. Richards, Ltd.*	1,300 0 0

* Accepted. [All of Newport.]

Barnard Castle.—Accepted for the erection of Villa Residence, Park Terrace, Barnard Castle, for Mr. F. W. Raper. Mr. T. Farrow, architect, 7, Market Place, Barnard Castle. Quantities by architect:—

Bricklayer and mason—J. Kyle & Sons.	
Carpenter and joiner—T. Borrowdale & Son.	
Plumber and glazier—E. C. Raine.	
Plaster—F. Welford.	
Tiler—J. Lancaster.	
Painter—G. W. Jackson.	

[All of Barnard Castle.]

Bromley (Kent).—For additions and decorations, "Rothsay," Plaistow Lane:—

T. Crossley & Son, Bromley	£309 10 0
T. D. Grady,* Bromley	262 0 0

* Accepted.

Chelmsford.—For the construction of a covered service reservoir, for the Town Council. Mr. Cuthbert Brown, A.M.I.C.E., borough engineer:—

J. H. MacDonald, Talgarth	£7,000 0 11
T. W. Pedrette, Stamford Hill ..	6,754 13 2
G. G. Raynor, Croydon	6,353 10 6
H. Ashley, Mansfield	6,274 12 8
A. Fasey & Son, Leytonstone ..	6,103 4 9
J. & T. Binns, Croydon	6,017 3 5
G. Wimpey & Co., Hammersmith ..	5,665 17 7
E. West, Chelmsford	5,650 0 0
G. Bell, Tottenham	5,590 17 10
J. H. Vickers, Ltd., Nottingham ..	5,544 11 11
J. Jackson, Forest Gate	5,479 1 5
Jenkins & Son, Leamington Spa ..	5,447 18 3
F. Johnson, Chelmsford	5,436 6 0
Greig & Mathew, London	5,375 7 5
Callender & Co., Westminster ..	5,346 0 0
Smith Brothers, Burnley	5,260 5 0
Moran & Son, Harwich	5,229 0 0
J. Double, Ipswich	5,046 0 0
H. Potter & Son,* Chelmsford ..	4,777 0 0
W. E. Westgate, Romford	4,753 0 0

* Accepted. [Borough engineer's estimate, £4,800.]

Chertsey.—For the erection of boiler-house, chimney shaft, laundry additions, machinery, rainwater tank, &c., at the Chertsey Union Workhouse. Mr. C. Welch, architect. Quantities by the architect:—

G. Wells, Chertsey	£4,265 0 0
G. Gray, Egham	4,179 0 0
Drowley, Woking	4,176 0 0
Neal, Plymouth	4,130 0 0
Page, Croydon	4,039 0 0
Goddard, Farnham	4,000 0 0
Dean, Atherley	3,993 8 0
Mussellwhite & Sass, Basingstoke ..	3,986 0 0
Horsell, Weybridge	3,937 0 0
Knight, Chertsey	3,925 0 0
Renshaw, Putney	3,897 0 0
Chamberlain, Addlestone	3,885 0 0
Whitehead, Clapham	3,875 0 0
Watson, Ascot	3,839 0 0
Foster, Norwood	3,783 0 0
Minter,* Putney	3,783 0 0

* Accepted. [Architect's estimate, £3,757.]

Fenton (Staffs).—For the erection of a free library, for the Urban District Council. Mr. F. R. Lawson, architect, Church Street, Fenton. Quantities by architect:—

Ball & Robinson	£5,050
G. Ellis	4,950

P. H. Bennion	£4,691
T. Goodwin	4,374
Tompkinson & Bettelley	4,217
Meiklejohn & Sons	4,129
J. Bagnall,* Fenton	4,102
Young & Son	3,927

* Accepted

London.—For the erection of a school, Timbercroft Road, Plumstead, for the London School Board. Mr. T. J. Bailey, Board's architect:—

J. Garrett & Son	£22,100
J. Greenwood, Ltd.	21,850
Martin, Wells & Co, Ltd.	21,450
Patman & Fotheringham, Ltd. ..	21,025
E. Lawrence & Sons	20,842
F. & H. F. Higgs	20,751
Thomas & Edge	20,635
J. Smith & Sons, Ltd.	20,515
J. & C. Bowyer	20,266
Treasure & Son	20,229
W. Downs	19,999
G. E. Wallis & Sons, Ltd.	19,556

* Recommended for acceptance.

London.—For sanitary and drainage works at Scawfell Street School, Hackney Road, for the London School Board. Mr. T. J. Bailey, Board's architect:—

E. Lawrence & Sons	£3,076
G. S. S. Williams & Son	2,947
G. Neal	2,866
L. H. & R. Roberts	2,788
J. Peattie	2,682
Stevens Brothers	2,668
F. Bull	2,614
J. Willmott & Sons*	2,585

* Recommended for acceptance.

London.—For enlargement of Sigdon Road School, Dalston Lane, for the London School Board. Mr. T. J. Bailey, Board's architect:—

A. Porter	£2,028 0 0
W. Greger & Son	2,024 0 0
Perry & Co.	2,012 0 0
Marchant & Hirst	2,000 0 0
W. Shurmur & Sons, Ltd.	1,971 0 0
McCormick & Sons	1,914 0 0
Staines & Son, Ltd.	1,830 0 0

Treasure & Son	£1,856 0 0
C. Dearing & Son	1,808 10 0
J. Willmott & Sons	1,771 0 0
G. Neal	1,727 0 0
J. Chessum & Sons*	1,686 15 8

* Recommended for acceptance.

London.—For adaptation of houses 48 and 50, Acre Lane, Brixton, for the purpose of establishing home for mentally defective girls, for the London School Board. Mr. T. J. Bailey, Board's architect:—

Rice & Son	£3,769
E. B. Tucker	3,756
W. Akers & Co.	3,637
J. Garrett & Son	3,624
E. P. Bulled & Co.	3,593
J. & C. Bowyer	3,587
F. & H. F. Higgs	3,563
W. J. Mitchell	3,547
H. Groves	3,533
E. Triggs	3,475
J. Appleby & Sons	3,415
Holliday & Greenwood, Ltd. ..	3,383
Edwards & Medway	3,160

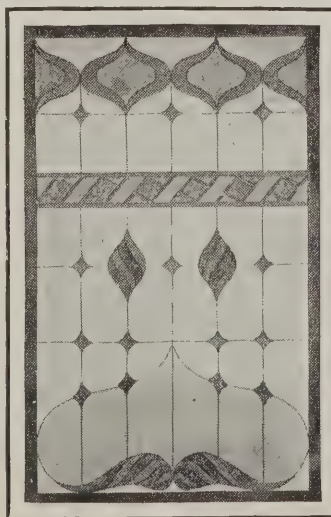
* Recommended for acceptance.

London.—For enlargement of Elizabeth Street School, North Woolwich, for the London School Board. Mr. T. J. Bailey, Board's architect:—

W. Akers & Co.	£4,183 0 0
J. Smith & Sons, Ltd.	4,128 0 0
Martin, Wells & Co., Ltd.	3,883 0 0
J. Garrett & Son	3,876 0 0
Rice & Son	3,834 0 0
G. E. Wallis & Sons	3,793 0 0
Lathley Brothers	3,701 0 0
Thomas & Edge	3,697 0 0
T. D. Leng	3,689 0 0
W. Harris	3,621 16 0
J. & C. Bowyer	3,597 0 0
Treasure & Son	3,446 0 0
Enness Brothers	3,319 0 0
Edwards & Medway	3,318 0 0
E. P. Bulled & Co.*	3,299 0 0

* Recommended for acceptance. (Continued on p. xviii.)

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ARCHITECT OR C.E.'s GENERAL ASSISTANT desires London re-engagement. 15 years in and out-door experience. Working drawings, details, specifications, steel construction. Excellent references.—Box 380, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

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JOINER (good), wants JOB, 8 years' experience, age 23, suit small Builder, well up in stairs and fixing.—V. R., 2, Eve Rd., South Tottenham. 367

MACHINIST wants SITUATION.—Spindle turner, planer, saws, &c. Used to quick joinery trade. Attend gas engine. Good references, wages, 8d. per hour.—Write C. M., 37, Frensham Road, Fratton, Hants. 332

PLUMBER, GAS and HOT WATER FITTER, wants JOB. New work or jobbing, day or piece; 11 years' experience. Distance no object.—T. C., 89, Roman Road, Barnsbury, N. 358

PROFESSIONAL ASSOCIATE OF THE SURVEYORS' INSTITUTION requires engagement as Surveyor or Assistant Engineer. Five years' experience in land agent and surveyor's office, and five years' under engineer of sewage works. Well up in land surveying and levelling, mathematics and applied mechanics.—Box 333, BUILDERS' JOURNAL Office, 6, Great New Street, E.C.

SHOP FOREMAN of JOINERS. Large experience of all kinds of joinery under leading architects. Good manager of men and machinery. Accurate setter-out. Good references.—L., 3, Stanley Terrace, Layton Road, Brentford. 378

SPECULATIVE BUILDERS and PROPERTY OWNERS. Painting, &c., wanted, large or small quantities. Best materials only used. Distance no object.—REYNOLDS, 9, Woodside Avenue, South Norwood. 337

STAINED GLASS, Mosaics, Leaded Lights, Decoration and Figure and Ornamental Designer, and Cartoonist.—E. S. W., 43, Ranelagh Road, Ealing, London, W. 369

TO ARCHITECTS.—Quantities taken out accurately. Midland and Northern practice. Small percentage.—SURVEYOR, Box 362, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

TO LARGE EMPLOYERS OF LABOUR. THE NATIONAL ASSOCIATION for RESERVE SOLDIERS, 119, Victoria Street, S.W., tel. 367, Westminster, telegrams, "Employons," London, supplies men of good character only, as Porters, Labourers, Caretakers, Carmen, Night Watchmen, Timekeepers, Carpenters, Masons, Bricklayers, Navvies, Handy Men, &c. Characters up to date. No fees.—Apply SECRETARY, as above.

TO W.D. or ADMIRALTY CONTRACTORS.—GENERAL FOREMAN requires SITUATION Well-up in schedule. Four years in charge of specials, measure and abstract. Abstainer; age 27.—H. C., 9, Page's Lane, Muswell Hill, Hornsey, N. 357

WANTED, job as Builder's Junior Clerk/ joiner by trade; can take off quantities, and measure up work; refs.—J. C., P. O. Pannal, N.E.R., Yorks. 384

WORKING FOREMAN of CARPENTERS seeks ENGAGEMENT. Well up in all branches. Used to pushing jobs. Town or country. Age 45. Good references.—A. M. F., 38a, Edenvale Street, Fulham, S.W. 365

YOUNG MAN, age 23, 7 years' experience roadmaking, surveys, buildings, certificate building construction and quantities. First-class references.—HORACE HARVEY, Hannington House, Broadstairs. 375

Appointments Vacant.

BUILDER'S ASSISTANT WANTED for Camden Town office. Must have several years' experience, able to keep prime cost, book up materials and plant, write up contract and jobbing accounts and general routine. State age, salary, experience, and where last employed.—Box 389, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

BUILDER'S CLERK.—Must have experience of general routine of builder's office, be capable of taking off quantities, measuring up work, etc. Particulars of experience, age, and salary required to J. ROTHWELL & SONS, Builders and Contractors, St. Helens, Lancs.

CLERK WANTED for Contractor's office. Must be well up in builders' book-keeping and accounts; send reference from last employer, also state age and salary required.—Apply WALL & HOOK, Builders and Contractors, Brimscombe, Gloucestershire.

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Miscellaneous.

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THE FOLLOWING BOOKS (new), carriage paid.—"Gwilt's Encyclopædia," 12/6; "Practical Rules for Drawing," G. G. Pyne, 3/- (pub. 7/6); "Some Hints on Learning to Draw," 3/6 (pub. 8/-); "Modern Architecture" (35 plates), 10/-.—Box 387, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

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RUGBY URBAN DISTRICT COUNCIL. TO CONTRACTORS.

The above Council invite TENDERS or the Construction of an Egg-shaped OUTFALL SEWER, about 1232 yards in length, together with the Manholes, Connections, and other Works connected therewith.

The Plans, Specifications, and Conditions of Contract can be seen at the office of the undersigned, where also copies of the Bill of Quantities and Form of Tender can be obtained by intending Contractors on payment of Two Guineas, which will be returned on the receipt of a bona fide Tender.

Tenders on the form prescribed and endorsed "Outfall Sewer," must be sent to T. M. WRATISLAW, Esq., Clerk to the Council, High Street, Rugby, on or before the 21st day of MAY next.

The Council do not bind themselves to accept the lowest or any Tender.

By order,
D. G. MACDONALD, Assoc. M.Inst.C.E.,
Surveyor to the Council.

Rugby, April, 1904.

BIGGLESWADE JOINT HOSPITAL BOARD. TO BUILDERS.

The above Board are prepared to receive TENDERS for CARRYING OUT the ENLARGEMENT of the ISOLATION HOSPITAL at Biggleswade and invite persons desirous of TENDERING to forward their names, not later than 7th MAY, 1904, to Mr. HENRY YOUNG, of Bedford, the Architect to the Board.

Plans and Specifications can be seen and further particulars obtained at his office, Maitland Street, Midland Road, Bedford.

Bills of Quantities will be supplied to such persons on payment of £2 2s., returnable on receipt of a bona fide Tender.

Sealed Tenders, endorsed "Tenders for Hospital," are to be addressed to the Clerk of the Joint Hospital Board at Biggleswade, and delivered on or before NOON of TUESDAY, the 31st day of MAY, 1904.

The Board do not bind themselves to accept the lowest or any Tender, or to defray any expenses in connexion with tendering.

By order,
Biggleswade, HENRY CHAUNDLER,
25th April, 1904. Clerk.

TO ENGINEERS AND Others.

The Metropolitan Asylums Board invite TENDERS for ENGINEERING REVISIONS IN LAUNDRY, and EXHAUST AND CONDENSED STEAM, HOT-AIR, and RAIN-WATER UTILISATION, at Leavesden Asylum, near Watford, Herts, in accordance with drawings and specification prepared by Mr. W. T. HATCH, M.I.C.E., M.I.M.E., Engineer in Chief.

Drawings, specification, conditions of Contract, and form of Tender may be inspected at the Office of the Board, Embankment, London, E.C., on and after FRIDAY, APRIL 22nd, 1904, and can then be obtained upon payment of a deposit of £2. The amount of the deposit will be returned only to persons who have sent in bona-fide Tenders in accordance with the regulations.

Tenders, addressed as noted on the form, must be delivered at the Office of the Board not later than TEN a.m. on TUESDAY, 17th MAY, 1904.

By Order,
T. DUNCOMBE MANN,
18th April, 1904. Clerk to the Board.

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EMPLOYMENT REGISTER.

Too late for Classification.

- 375.—CONTRACTOR'S ASSISTANT, age 23, seven years' ex., roadmaking, surveys, buildings, quantities, certificate bldg. construction.
- 376.—ESTATE CLERK OF WORKS, long experience on country estates, plans and accounts, and management, good rels.
- 377.—ARCHITECT'S AND SURVEYOR'S ASSIST., age 25, experienced, nine yrs. in good office, ex. rels.
- 378.—SHOP FOREMAN OF JOINERS, wide ex., good manager, good rels., accurate setter-out.
- 379.—ESTIMATOR, ex. of quantities, measuring up, accs., plans, specification, valuation, &c., temporary work taken.
- 380.—ARCHITECT'S OR C.E.'S GENERAL ASSIST., 15 yrs. varied exp., wkg. drawings, details, specifications, steel construction, good rels., London.
- 382.—IMPROVER wants job as timekeeper or can assist in joiner's shop, early riser, good rels.
- 383.—ARCHITECT'S CLERK, passed London matric. in arithmetic, algebra, and geometry, and fond of drawing.
- 384.—BUILDER'S JUNIOR CLERK. Joiner by trade. Quantities and measuring up. Refs.
- 385.—DRAUGHTSMAN, age 22, 6 yrs. exp. Wkg. drawings, details, lettering and typewriting. Good rels.
- 386.—ARCHITECT, with own office, can assist with perspectives, designs, wkg. drawings and quantities.
- 388.—ARCH. AND SURVEYOR'S JUNIOR ASST.—7 yrs. e.t. Levelling, surveying, quantities, wkg. drawings, details, &c.
- 390.—BUILDER'S JUNIOR CLERK OR ASSISTANT; outside jobbing supervision preferable; measuring, tracing, &c.

See p. xxii for the Employment Register.

5 O'CLOCK P.M. MONDAY IS THE LATEST TIME FOR RECEIVING "WANT" ADVERTISEMENTS.
OFFICE: 6, GREAT NEW STREET, FETTER LANE, E.C.

TENDERS—cont. from p. xv.

London.—For reconstructing offices at Gideon Road School, for the London School Board. Mr. T. J. Bailey, Board's architect:—
E. Triggs .. £2,423
W. Downs .. 1,900
G. Parker .. 1,821
E. B. Tucker .. 1,763
Maxwell Brothers, Ltd. .. 1,716
Lathey Brothers .. 1,669
J. & C. Bowyer .. 1,657
H. Leney & Son .. 1,654
R. P. Beattie .. 1,568
Davis & Bennett .. 1,560
Whitehead & Co., Ltd.* .. 1,498
* Recommended for acceptance.

London.—For the erection of a school, Dunt's Hill site, Wandsworth, for the London School Board. Mr. T. J. Bailey, Board's architect:—
J. Garrett & Son .. 24,910
Leslie & Co., Ltd. .. 24,575
E. Lawrence & Sons .. 24,509
J. Carmichael .. 24,171
J. Simpson & Son .. 24,090
F. & H. F. Higgs .. 23,995
J. & C. Bowyer .. 23,987
Holloway Brothers, Ltd. .. 23,957
W. King & Son .. 23,947
Lathey Brothers .. 23,849
Martin, Wells & Co., Ltd. .. 23,819
J. & M. Patrick .. 23,654
W. Johnson & Co., Ltd. .. 23,499
Stimpson & Co. .. 23,450
Holliday & Greenwood* .. 23,337
* Recommended for acceptance.

London, N.—For providing and laying new fire-mains and hydrants at the St. John's Road Workhouse, Upper Holloway, for the Guardians of St. Mary, Islington. Mr. William Smith, architect, 65, Chancery Lane, W.C.:—

Simmons .. £3,828
W. Reason .. 1,897
Merryweather & Son .. 1,793
May .. 1,793
Richmond & Co. .. 1,671
Wenham & Waters .. 1,610
Plakeborough & Son .. 1,572
Harding & Son .. 1,524

London.—For adaptation of Oak Lodge, Nightingale Lane, Wandsworth Common, for the purpose of establishing a residential home for elder deaf girls, for the London School Board. Mr. T. J. Bailey, Board's architect:—

R. A. Jewell .. £5,463
E. Lawrence & Sons .. 5,155
F. & H. F. Higgs .. 5,029
E. P. Bulled & Co. .. 4,997
J. Garrett & Son .. 4,979
J. Carmichael .. 4,918
J. & C. Bowyer .. 4,918
Lathey Brothers .. 4,923
W. Downs .. 4,879
J. Appleby & Sons .. 4,820
Treasure & Son .. 4,803
W. Johnson & Co., Ltd. .. 4,780
F. G. Minter .. 4,700
E. Triggs* .. 4,700
* Recommended for acceptance.

London.—For heating apparatus for the Brownhill Road School, Catford, for the London School Board. Mr. T. J. Bailey, Board's architect:—
Stevens & Sons .. £1,600
W. G. Cannon & Sons .. 1,495

J. & F. May .. £1,400
Paragon Heating Co. .. 1,372
Z. D. Berry & Sons .. 1,335
C. Kite & Co. .. 1,300
Brightside Foundry and Engineering Co., Ltd. .. 1,297
B. Harlow & Son .. 1,297
Wippell Brothers & Row .. 1,295
J. Wontner-Smith, Gray & Co. .. 1,246
J. Fraser & Son* .. 1,183
* Recommended for acceptance.

London.—For the provision of a swimming-bath and other works at the Highbury Truant School, for the London School Board. Mr. T. J. Bailey, Board's architect:—

T. L. Green .. £3,693
W. Shurmer & Sons, Ltd. .. 3,663
J. Grover & Son .. 3,626
G. S. S. Williams & Son .. 3,566
Stevens Brothers .. 3,524
W. Downs .. 3,490
J. Willmott & Sons .. 3,450
McCormick & Sons .. 3,408
E. Lawrence & Sons .. 3,258
C. Dearing & Son* .. 3,253
* Recommended for acceptance.

London.—For reconstructing offices, &c., at Flora Gardens School, Hammersmith, for the London School Board. Mr. T. J. Bailey, Board's architect:—

J. Carmichael .. £2,000 0 0
Martin, Wells & Co., Ltd. .. 1,850 0 0
G. Neal .. 1,837 0 0
C. W. Killingback & Co. .. 1,790 0 0
W. Hammond .. 1,799 0 0
R. P. Beattie .. 1,755 10 0
J. Peattie .. 1,736 0 0
Lathey Brothers .. 1,709 0 0
F. Bull .. 1,658 0 0
Davis & Bennett* .. 1,598 0 0
* Recommended for acceptance.

London.—For sanitary and drainage works at Cator Street School, Peckham, for the London School Board. Mr. T. J. Bailey, Board's architect:—

J. W. Falkner & Sons .. £3,532
W. Downs .. 3,508
W. J. Mitchell & Son .. 3,485
G. Parker .. 3,485
W. Hammond .. 3,439
J. & C. Bowyer .. 3,352
H. Leney & Son .. 3,279
Lathey Brothers .. 3,263
J. Peattie* .. 3,207
* Recommended for acceptance.

London, E.—For the erection of the second half of the electricity-generating station at the Osborn Street electricity works, E., for the Stepney Borough Council. Mr. M. W. Jameson, borough engineer:—

F. & F. J. Wood, Mile End, E. .. £19,558 0 0
W. Greger & Son, Stratford, E. .. 18,290 0 0
H. C. Godfrey, Eynsford, Kent .. 18,200 0 0
Thomas & Edge, Woolwich, S.E. .. 17,449 0 0
J. E. Johnson & Son, Leicester .. 17,447 0 0
J. Ferguson & Co., Tottenham, N. .. 16,959 0 0
J. E. Symes, Stratford, E. .. 16,147 18 0
Harris & Wardrop, Burdett Road, E. .. 16,000 0 0
J. Shelbourne & Co., London, E.C. .. 15,964 0 0
L. F. Lamplough, Notting Hill .. 15,258 0 0
S. E. Moss & Co., Southend-on-Sea .. 15,169 0 0
W. Lawrence & Son, Waltham Cross .. 15,000 0 0
Patman & Fotheringham, Ltd., Islington .. 14,986 0 0
.. 14,903 0 0

J. Smith & Sons, Ltd., South Norwood .. £14,885 0 0
Foster Brothers, Norwood Junction, S.E. .. 14,832 0 0
F. G. Minter, Putney, S.W. .. 14,748 0 0
H. Knight & Son, Tottenham .. 14,746 0 0
J. J. Jerram, East Ham .. 14,537 0 0
H. Lovatt, Ltd., West Kensington .. 14,325 0 0
J. Allen & Sons, Ltd., Kilburn .. 13,985 0 0
F. & E. Davey, Southend-on-Sea .. 13,957 0 0
F. & T. Thorne, Isle of Dogs, E. .. 13,200 0 0
B. E. Nightingale,* Albert Embankment, S.E. .. 12,911 0 0
* Accepted.

London.—For wiring the Eastern Hospital and Ambulance Station for electric-lighting purposes, for the Metropolitan Asylums Board:—

A. V. Giffins & Co., Westminster .. £5,273 0 0
Wenham & Waters, Ltd., Croydon .. 5,172 0 0
Buchanan & Curwen, Westminster .. 5,038 0 0
Edmundson's Electricity Corporation, Ltd., Westminster .. 4,459 0 0
Eastlake's, Ltd., London, S.W. .. 3,615 0 0
Berthel & Young,* 12, Camomile Street, E.C. .. 3,378 15 6
[Engineer's revised estimate, £3,500.]
* Accepted.

London, S.W.—For the reconstruction of sewers in the following streets:—Alfred Street, Arthur Street, Chapel Place, Lancelot Place, Middle Street, Montpellier Row, Montpellier Square (north), Montpellier Street, Raphael Street, Rutland Street, Sterling Street, Trevor Square, Vauxhall Bridge Road and Warwick Street, for the Westminster City Council:—

Johnson & Langley .. £13,575 8 6
Fedrette & Co. .. 13,316 12 2
C. Ford .. 11,884 0 0
C. W. Killingback & Co. .. 10,153 1 10
Fethick Brothers .. 9,649 16 3
J. Mowlem & Co., Ltd. .. 8,682 0 0
T. Adams .. 8,778 19 0
R. Ballard, Ltd. .. 8,295 0 0
E. Parry & Co. .. 7,868 7 6
A. J. Neave .. 7,716 10 1
W. Neave & Son .. 7,468 0 0
D. R. Paterson* .. 6,953 10 0
* Accepted.

Norwich.—For the erection of Burlington Buildings, Oxford Place, Norwich, for Mr. C. Larking and others. Mr. J. Owen Bond, architect, 15, Upper King Street, Norwich. Quantities by architect:—

Downing & Son .. £5,566
J. Holmes & Son .. 5,300
Scarles Brothers .. 4,900
J. S. Smith .. 4,900
J. Hurn .. 4,850
J. Youngs & Son .. 4,797
T. W. Utting .. 4,752
T. Gill .. 4,747
* Accepted.

Skewen (Wales).—For the erection of a public library at Skewen, for the Coodfranc Parish Council. Mr. J. Cook Rees, architect, Neath:—

D. Davies .. £2,245 0 0
H. Billings .. 2,075 0 0
Bennett Brothers .. 2,070 0 0
D. Jenkins .. 2,025 0 0
J. Davies .. 1,997 10 0
Walters & Johns .. 1,995 0 0
Price Brothers,* Cardiff .. 1,899 0 0
* Accepted.

(Continued on p. xx.)

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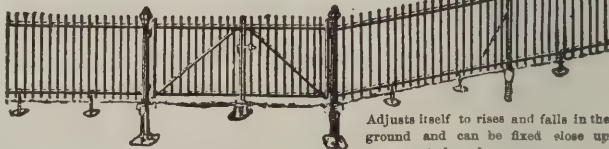
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(See displayed Advt. in issue for April 20, p. vii.)

Property & Land Sales.

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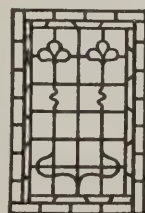
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TENDERS—cont. from p. xviii.

Mansfield.—For the erection of stables and foreman's house, for the Health Department. Mr. R. Frank Vallance, borough surveyor:—

T. Fisher	£1,642
A. Eastwood, Warsop	1,622
C. Vallance	1,550
J. Parsons, Nottingham	1,523
A. R. Roe	1,478
C. G. Percival	1,470
W. A. Vallance	1,460
S. B. Frisby	1,457
J. Greenwood	1,440
Tweltridge & Moore	1,409
H. Ashley	1,394
Vallance & Flythe*	1,393

[Rest of Mansfield.]

West Ham.—For furniture required for the outfit of the Whalebone Lane Schools, Stratford, E., for the Education Committee. Mr. William Jacques, A.R.I.B.A., architect, 2, Fen Court, Fenchurch Street, E.C.:—

Heath & Son	3,674	0	0
Unity Wood and Iron Co.	2,523	0	0
G. E. Hawes	2,400	0	0
North of England School Furnishing Co.	2,373	0	0
Fisher, Son & Weaver	2,270	0	0
Educational Supply Association ..	2,165	17	6
Wake & Dean,* London	1,890	0	0

* Accepted.

Bankruptcies.

[Abbreviations: R.O.—receiving order; P.E.—public examination; C.C.—county court; O.R.—official receiver; Adj.—Adjudication.]

DURING THE WEEK ending May 6th twenty-nine failures in the building and timber trades in England and Wales were gazetted.

- E. J. BIRCH, builder, Birmingham. Adj. April 26th.
 W. H. SMALL, builder, Brockley. R.O. April 26th.
 H. C. HUMPHREY, timber and slate merchant, Birmingham. Liabilities £1,879; assets £231.
 R. JONES, joiner, Hull. Gross liabilities £3,390; £193 expected to rank for dividend; assets £12.
 S. PARMENTER, builder and contractor, Brentwood, formerly of Braintree. Assets realized £2,048.
 J. E. KITTON, builders' materials merchant, Barking. Liabilities £3,177; assets £9; deficiency £3,168.
 W. TERRY, builder, Basingstoke. P.E., The Castle, Winchester, June 13th, at 11.
 D. LOWMAN, contractor and decorator, Northfleet. R.O. April 29th.
 H. J. HADDON & C. WARE, builders, West Ealing. Adj. April 28th.

STAFFORDSHIRE TERRA-COTTA AND FIRE BRICK CO., Littleworth. R.O. April 28th.

T. O. BROWN, builder and contractor, Ferndale, Glam. R.O. April 28th

J. SUMMERFIELD, road and sewer contractor, Westcliff-on-Sea. Liabilities £1,329; assets £103; deficiency £1,226.

J. CRITCHLEY, joiner and builder, Chorley. R.O. April 27th. First meeting. 19, Exchange Street, Bolton, May 20th, at 3. P.E., Bolton C.C., June 8th, at 3.

N. DOWSING, builder, Ipswich. R.O. April 26th, First meeting. O.R.'s, Ipswich, May 11th, at 11. P.E., Ipswich Shirehall, May 20th, at 10.30.

ROGERS. VINCENT & CO., architects and surveyors, Wimbledon. First meeting, Cannon Street Hotel, May 13th, at 11.30. P.E., Kingston C.C., June 7th, at 2.30.

Coming Events.

Wednesday, May 11.

SOCIETY OF ARTS.—Mr. Richard R. Holmes on "Early Painting in Miniature," at 8 p.m.
 GEOGRAPHICAL SOCIETY.—Meeting at 8 p.m.
 SOCIETY OF BIBLICAL ARCHEOLOGY.—Meeting at 37, Great Russell Street, at 4.30 p.m.

Thursday, May 12.

AUCTIONEERS' INSTITUTE. — Annual General Meeting, at 2.30 p.m.
 SOCIETY FOR THE ENCOURAGEMENT OF THE FINE ARTS.—Conversazione at the Galleries of the Royal Society of British Artists, Suffolk Street, Pall Mall.
 INSTITUTION OF ELECTRICAL ENGINEERS.—Discussion on Messrs. Merz and McLellan's paper, Messrs. Parsons, Stoney and Martin on "The Steam Turbine as applied to Electrical Engineering," at 8 p.m.

Friday, May 13.

ARCHITECTURAL ASSOCIATION.—Members' Dinner, Criterion Restaurant, Piccadilly Circus, at 7 p.m.
 ROYAL INSTITUTION.—Mr. M. H. Spielmann, F.S.A., on "The Queen Victoria Memorial," at 9 p.m.

Saturday, May 14.

ARCHITECTURAL ASSOCIATION.—First Summer Visit to Moor Park, Rickmansworth.
 INCORPORATED ASSOCIATION OF MUNICIPAL AND COUNTY ENGINEERS.—Yorkshire District Meeting at York.
 INSTITUTE OF SANITARY ENGINEERS.—Visit to Power Station, London Tramways Co., and Messrs. Thornycroft's Works, Chiswick.
 BRITISH INSTITUTE OF CERTIFIED CARPENTERS.—Visit to St. Paul's, at 2.45 p.m.
 NORTHERN ARCHITECTURAL ASSOCIATION.—Students' Sketching Club Excursions.

Monday, May 16.

SURVEYORS' INSTITUTION.—Ordinary General Meeting, at 8 p.m.
 ROYAL INSTITUTE OF BRITISH ARCHITECTS.—Rev. J. B. Luck, M.A., on "The Planning of Collegiate Buildings," at 8 p.m.

Tuesday, May 17.

EDINBURGH ARCHITECTURAL ASSOCIATION.—Visit to Melrose and Darnick Tower.
 SOCIETY OF ARTS (Applied Art Section).—Mr. Lasenby Liberty on "Pewter and the Revival of its Use," at 8 p.m.

Wednesday, May 18.

INSTITUTE OF SANITARY ENGINEERS.—Election Committee at 3 p.m. General Purposes and Finance Committee at 5 p.m. Council Meeting at 7 p.m.

Friday, May 20.

CITY OF LONDON COLLEGE SCIENCE SOCIETY.—(1) Annual General Meeting at 7.0. (2) Report on the Dover Congress of the Union of Scientific Societies, held in June, 1903, by Mr. H. Norman Gray.

Saturday, May 21.

EDINBURGH ARCHITECTURAL ASSOCIATION.—Visit to Fordell Castle and Old Garden.

Obituary.

Prof. von Lenbach, the great painter, died on May 5th at Munich.

Mr. John Barker, builder and contractor, Doncaster, died last Wednesday, aged 72.

Mr. George Garside, builder, of Southport, died recently.

Mr. J. B. Fisher, builder, of Blackpool, who died on March 19th, left estate which has been valued at £7,870 gross.

New Companies.

T. ALMOND & SON, LTD., builders contractors, &c., Ponders End, Essex. Capital: £4,000 in £1 shares.

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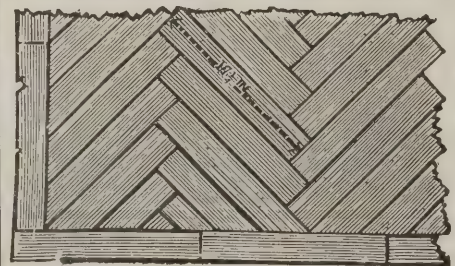
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THE BUILDERS' JOURNAL

AND ARCHITECTURAL RECORD.

May 18, 1904. Vol. 19, No. 484.

6, Great New Street, Fetter Lane, E.C.

Summary.

A Board of Defence, to which members of the R.I.B.A. can apply for the opinion of counsel on questions of importance to the whole profession, is to be formed. A Board of Education has also been appointed by the Institute. (Page 237.)

Mr. George Henry Birch, F.S.A., curator of Sir John Soane's Museum in Lincoln's Inn Fields, died on May 10th at the age of sixty-two. (Page 239.)

The British Fire Prevention Committee are offering their gold medal and £20 for the best fable for children calculated to serve as a warning against the danger of playing with matches or fire. Fables are to be sent in by October 31st. (Page 242.)

Walmer Place, Kent, where Lord Curzon is now residing pending the modernization of the historic Walmer Castle, was recently reconstructed, enlarged and decorated under the direction of Mr. Edwin O. Sachs, at a cost of between £40,000 and £50,000. (Page 241.)

In many churches in the suburbs of London are to be found pulpits or other fittings removed from the City, the reredos of St. Michael Bassishaw having travelled as far as St. Michael's at Basingstoke. The very stones of St. Mildred's Church, Poultry, are in a gentleman's park near Louth, Lincolnshire. Broadly speaking, in the demolitions which have gone on now for years the finest churches have survived, and their attractions have often been enhanced by spoils from the condemned structures, as instanced by St. Margaret's, Lothbury. (Page 232.)

The directors of the British Uralite Co., Ltd., offer fifty guineas in two or more prizes (the first prize to be not less than twenty guineas) for the best designs or practical suggestions for fixing "Uralite." Drawings are to be sent in not later than June 11th. (Page 242.)

A New York correspondent states that the Knickerbocker Trust Company building is probably the most expensive structure that has ever been erected in America. It is of statuary marble costing 3.60 dols. (15s.) per ft. cube. The ruling price for the best grades of building marbles in New York City is 1.25 dols. per ft. cube. (Page 234.)

In a paper on the planning of collegiate buildings which he read before the Institute on Monday evening, the Rev. J. B. Lock said the plan recently adopted, quite independently, by Mr. Champneys at New College, Oxford, and Messrs. Aston Webb and Ingress Bell at Gonville and Caius College, Cambridge, was one of the best for a set of college rooms. (Page 237.)

The latest payment in respect of our insurance schemes is that of £6 made to Mr. R. Crosland, who was disabled for two weeks through an accident.

"Structures." THE action between the London County Council and the Illuminated Advertisements Company, decided in the King's Bench Division last Friday, is another instance of the difficulty in deciding on a mixed question of law and fact in respect of "structures" under the London Building Act. The company have erected twelve advertisement cases on a house in Cranbourne Street, constructed of sheet iron and supported by wrought-iron supports pinned to the wall, the front of the cases being covered with canvas advertisements illuminated by electric lights behind. Each case is about 3ft. by 6ft. and projects 10in. from the front wall, but not beyond a cornice that extends over the shop window. With the exception of the iron supports, it would be possible to move all the cases in a day without injury to the building: and Mr. Plowden, the magistrate who stated the case, was of opinion that they were not structures within sections 22 and 200 (3) of the Act of 1894, being more in the nature of excrescences which could be removed at will; and consequently they did not "bring forward" the building line. The Council contended that they were structures within the meaning of the Act. The Lord Justices, however, have confirmed Mr. Plowden's judgment. This case brings to mind the necessity of some controlling regulations in regard to such advertisement devices, which ought never to be allowed to deface the streets. It would be quite within the range of practical administration to stipulate that no letters of more than a certain size should be erected on the face of a building in a prominent thoroughfare, and no advertisement boards permitted to block out whole floors. If such places as Ludgate Circus, Tottenham Court Road, Regent Circus and Fleet Street were cleared of giant letters and signs their general appearance would be very much improved.

The Trade Paper. It is important that everyone should enquire at times into the ordinaries of life. We would put the question, How would commercial men get on without their trade papers? If a complete history of commerce ever came to be written, could we doubt that the advent of trade papers would be acknowledged to mark a revolution in business methods? The revolution may have been gradual, but it has been none the less complete and far-reaching in its benefits. No firm can be considered up-to-date nor completely equipped if it does not subscribe to a paper devoted to its particular trade; indeed, we doubt if such

a firm exists. The trade paper surveys the whole field. It is the eyes and ears of the keen business man, the means of intercommunication and nerve centre of the commercial community. Conducted by a staff familiar with every branch of the trade, it is able by its resources to gather in the news of business from every part, and by the interchange of ideas which the courtesy of contemporary "exchange" facilitates is enabled to present to its readers a survey and review of the entire trade it represents. The trade paper is one of the biggest factors in modern commerce, and the man who refuses to support his own paper neglects the interests of the community of which he is a member. The better the trade paper is supported the greater and more valuable the work it is enabled to perform: cripple it with insufficient support and this reflects on the intelligence of the trade represented by it. The well-supported trade paper can remove abuses and watch over the general well-being of the trade in a manner that would be impossible by any other means.

St. Anne's Cathedral, Leeds. THE new Roman Catholic Cathedral of St. Anne at Leeds, the architect of which is Mr. J. H. Eastwood, of Kensington, is now completed. For church purposes the site presented many awkward features, its breadth at one point being equal to its length. A wide nave was thus essential to the plan, and some relief has been gained by the construction of double side-aisles. The nave piers and arches are carried up as high as possible, and by ingenuity in this and other respects the architect has effectually counteracted the mathematical equality of the four sides of the site. The nave and side aisles have segmental pointed roofs, the utmost height being thus secured for clearstory and aisle windows. The high altar, in marbles, is surmounted by a baldachino, and the reredos is of carved wood, coloured and gilt. An ambulatory skirts the choir and sanctuary, leading to two turret staircases, one of which reaches to a gallery for the organ and additional choir. The chapter-house, octagonal, is approached by this ambulatory from the body of the cathedral, and is also connected with the presbytery by a turret staircase. On the opposite side are two sacristies, while near by, in the Lady Chapel, has been erected the reredos which in the old cathedral stood at the back of the high altar. The nave, aisles, transept and Lady Chapel will seat 850 persons, and the choir, exclusive of canons' stalls, 50.



ST. MILDRED, POULTRY, E.C. (DEMOLISHED 1872.)

NOTES ON THE CITY CHURCHES.—VI.

(Concluded from p. 150, No. 477.)

By F. HERBERT MANSFORD.

(Photographs by J. Mansell.)

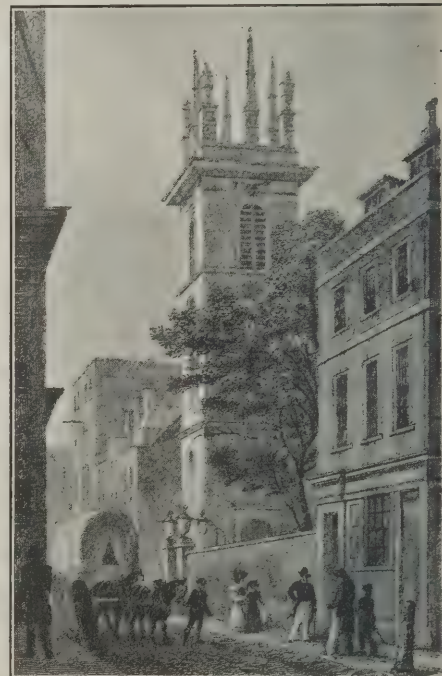
OUTSIDE the City we are frequently reminded of its old churches. St. Paul's, Goswell Road; St. Mary's, Hoxton; St. Benet's, Stepney; All Hallows, Poplar; and St. Mark's, Kennington—all contain pulpits or other fittings removed from the City; while the reredos of St. Michael Bassishaw has travelled as far as St. Michael's at Basingstoke. The marble altar slab supported by a kneeling angel which was formerly at All Hallows-the-Great is now at All Hallows, Gospel Oak. The very stones of St. Mildred's Church, Poultry, are lying in a gentleman's park near Louth, Lincolnshire. Throughout the suburbs are churches partly built or endowed by the proceeds of the sale of others in the City, and the dedication of which they usually adopt. For many years past the City clergy have had to face the difficulty of a decreasing residential population; the decrease continues, but the value of the land still goes

up, and the sites occupied by the churches offer a temptation to many earnest churchmen. Broadly speaking, in the demolitions which have taken place now for years the finest churches have survived and their attractions have often been enhanced by spoils from the condemned structures. St. Margaret, Lothbury, is one of these fortunate ones. Originally a church of few embellishments, mainly through the energy of the rector it now displays one of the best furnished interiors in the City. The magnificently carved chancel screen (see p. 235) was the gift of the Hanseatic merchants in London, the eagle with outspread wings poised in the centre being the emblem of the great German League. This, with the fine pulpit, has been transferred from All Hallows-the-Great. The painted figures of Moses and Aaron on either side of the altar were formerly at the east end of St. Christopher-le-Stocks. The south aisle has been transformed into a morning chapel with the use of the altar and other fittings from St. Olave's, Old Jewry; the chancel rail of which church has been inserted between the columns and forms a base to a series of beautiful oak screens designed by Messrs. Bodley & Garner. A marble font by Grinling Gibbons and the thick carpets under the pews enhance the rich

effect of this aisle, while a series of stained-glass windows is projected for the south wall.

The north aisle of St. Giles, Cripplegate, has recently been fitted up in a somewhat similar manner with the twice-removed fittings of St. Bartholomew by the Exchange. The reredos is remarkably fine (see p. 234), and the richly-toned paintings of Moses and Aaron accord well with the colour of the oak, but the recent painting taking the place of the Decalogue, and those upon the wood panelling on the north wall (illustrated on this page), although most pleasing in themselves, require the mellowing of time: they are from the brush of Mr. Innes Fripp and represent the doctrine of the Incarnation.

Similarly St. James, Garlickhithe, gained by the demolition of St. Michael, Queenhithe; St. Martin, Ludgate, by the destruction of St. Mary Magdalene, Old Fish Street; and



TOWER OF ST. MARY SOMERSET, UPPER THAMES STREET, E.C.

(This church was demolished in 1871 and the churchyard thrown into the roadway.)

St. Michael, Paternoster Royal, by that of All Hallows-the-Great. The old fittings look far more congruous in such surroundings than in modern suburban churches, which rarely afford the solid and dignified background which such woodwork needs.

Those who value the City churches from an artistic standpoint must rejoice at anything which renders more beautiful those still remaining. The adornment of St. Margaret's, Lothbury, is its greatest security.

There are not half a dozen churches still left which could be spared without considerable artistic loss. Architects, as such, although rarely indifferent to reverence for consecrated sites, are not specially concerned with this matter, nor with the attachment of some parishioners to their own churches, nor with the advisability or otherwise of an historic establishment wilfully destroying traditions of past centuries because it happens to be attached to a prominent and valuable site. But architects as a body are concerned when they see buildings which have evoked the designer's greatest powers swept away long before they are decayed, or their beauty marred by such excrescences as have been built against St. Dunstan's-in-the-West and Christ Church, Newgate Street, purely for the sake of gain.

Wren's glorious group of steeples is a thing of the past. Five churches have been destroyed in Threadneedle Street alone. The 115 churches of the Middle Ages have



PAINTINGS AND WOODWORK IN NORTH AISLE, ST. GILES, CRIPPLEGATE, E.C.

become 51, and St. Bartholomew-the-Less is threatened by a Bill now before Parliament. In the ordinary course of events a few more will be lost as a result of fires or street improvements. The City Churches Preservation Society endeavours that as few cases of demolition occur as possible, and that, when sentence of destruction has gone forth, the towers at least be preserved. With their stones, wrought in simple faith, as memorials of the love, the labour and the sacrifice of the past, the City streets of the future cannot be wholly material.

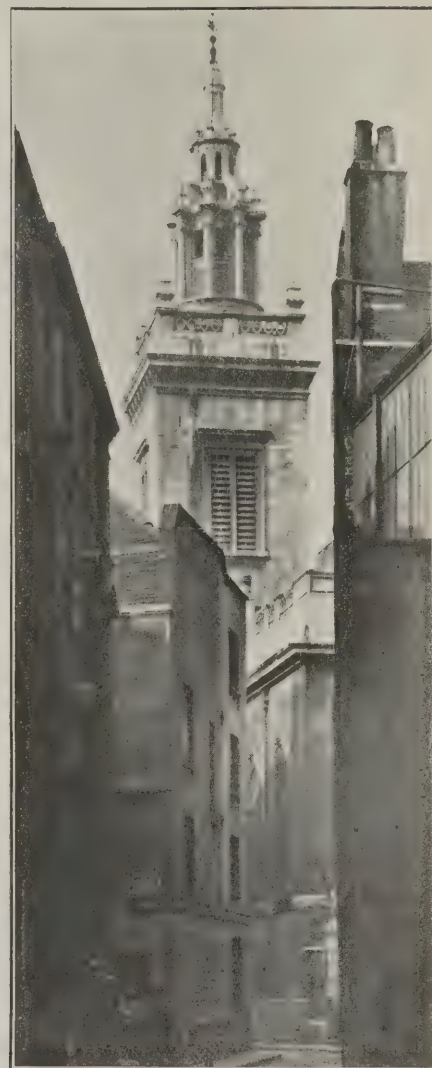
The following is a list of the churches destroyed since the Great Fire of London in 1666:—

- 1781. St. Christopher-le-Stocks.
- 1831. St. Michael, Crooked Lane.
- 1841. St. Bartholomew by the Exchange.
- 1843. St. Benet Fink.
- 1867. St. Benet Gracechurch.
- 1870. All Hallows, Staining.
- 1871. St. Mary Somerset.
- 1872. St. Mildred, Poultry.
- 1874. St. Antholin, Watling Street.
- 1874. St. James, Duke's Place, Aldgate.
- 1874. St. Martin Outwich.
- 1876. St. Michael, Queenhithe.
- 1876. All Hallows, Bread Street.
- 1878. St. Dionis Backchurch.
- 1881. St. Matthew, Friday Street.
- 1887. St. Mary Magdalene, Old Fish Street (burned).
- 1888. St. Olave, Old Jewry.
- 1894. All Hallows - the - Great, Thames Street.
- 1897. St. Michael, Wood Street.
- 1898. Holy Trinity, Minories (closed but not demolished).

- 1900. St. Michael, Bassishaw.
- 1901. St. Bartholomew, Moor Lane (removed from the Exchange).
- 1904. St. George, Botolph Lane.

The following is a list of the principal works dealing with the churches of the City of London:—

- 1749. "Parentalia."
- 1735. "Survey of the Cities of London and Westminster" (Seymour).
- 1736. "Perspective views of the ancient churches in London and Westminster" (W. H. Toms).
- 1823. "Life and Works of Wren" (J. Elmes).
- No date. "St. Dunstan's-in-the-West." Views of the ancient church and monuments. (Rev. J. F. Denham.)
- 1838-9. "London Churches" (Britton & Godwin).
- 1848-9. "Churches of Wren" (J. Clayton).
- 1853. Proposal for supplying the Suburbs of London with some of the Churches not required in the City (Rev. Charles Hume).
- No date. "The Church of St. Mary Somerset" (Thomas Milbourn).
- 1870. Memorials of St. Lawrence Jewry (R. A. Turner).
- 1872. "History of the Church of St. Mildred, Poultry" (Thomas Milbourn).
- 1873. "History of the Church of St. Peter, Cornhill" (Rev. Richard Whittington).
- 1878. Restoration of St. Sepulchre's Church, Holborn, with plans and report (London and Middlesex Archaeological Society).



ST. MICHAEL, COLLEGE HILL, E.C.

The design of this steeple follows one of Sir Christopher Wren's favourite types—a plainly-treated square tower rising above the neighbouring roofs with a belfry in its upper storey, surmounted by a parapet and a spire of lighter construction, in which columns supporting vases form the chief elements. The steeple of the neighbouring church of St. James, Garlickhithe, is also in three stages and is similarly composed, but the spire is square on plan instead of being circular, and thus affords an interesting comparative study with the other example.

- 1881. "Towers and Steeples of Sir Christopher Wren" (A. T. Taylor).
- 1881. "Notes on St. Botolph, Aldersgate" (Sir John Staples, Kt.).
- 1882. Memorial from the Dean and Chapter of St. Paul's to the Bishop of London against the proposed reduction of City Churches.
- 1883. "London Churches, Ancient and Modern" (T. Francis Bumpus).
- 1885. Catalogue of the Tombs in the Churches of the City of London, A.D. 1666, by Major Payne Fisher (Reprinted).
- 1887. "London City Churches destroyed since 1800, and now threatened" (W. Niven).
- 1887. "An account of the Wood Carvings of St. Michael's Church, Cornhill" (A. T. Layton).
- 1888. "St. Bartholomew-the-Great, West Smithfield" (Norman Moore).
- 1888. "St. Giles, Cripplegate" (J. J. Baddeley).
- 1889. "Holy Trinity, Minories, Past and Present" (Rev. S. Kinns).
- 1890. "St. Stephen's Church, Walbrook" (C. Penrose). (Trans. R.I.B.A., Vol. VI., New Series.)
- 1891. "An account of the Ancient Church of St. Helen, Bishopsgate" (Rev. J. A. L. Airey).



FONT IN SOUTH AISLE OF ST. MARGARET'S, LOTHBURY, E.C.

1894. "Annals of St. Olave's, Hart Street" (Rev. Alfred Povah).
 1895. "London City Churches" (A. E. Daniell).
 1896. "Views of St. Bartholomew-the-Great," with notes by E. A. Webb (F. Dovaston).
 1896. "London Churches of the Seventeenth and Eighteenth Centuries" (G. H. Birch, F.S.A.).
 1896. "List of Monumental Brasses in the City of London Churches" (Andrew Oliver, F.R.I.B.A.).
 1897. "Life Work and Influence of Wren" (Arthur Stratton).
 1898. "St. Botolph, Aldgate" (Rev. A. G. B. Atkinson).
 1898. "Communion Plate of the Parish Churches of the County of London" (Edwin Freshfield, F.S.A.).
 1898. "The City Churches, on the Population of the City Parishes, Church Attendances and Clerical Incomes" (Rev. H. W. Clarke).
 1899. "Berkyngeschurche by the Tower," the Story of All Hallows, Barking (Rev. C. R. D. Biggs).
 1901. "London Afternoons" (Rev. W. J. Loftie).
 1901. "Medieval London" ("Portfolio" monograph No. 42). Rev. W. Benham and Charles Welch, F.S.A.

NOTE.—Almost all the above works are in

the Guildhall Library, together with many others dealing with the parishes rather than the structures of the churches themselves.

The preceding articles in this series appeared in the following issues:—

- I.—December 16th, 1903.
 II.—January 13th, 1904.
 III.—February 10th, 1904.
 IV.—March 2nd, 1904.
 V.—March 30th, 1904.

Correspondence.

Knickerbocker Trust Building, New York.

To the Editor of THE BUILDERS' JOURNAL.
 NEW YORK.

SIR,—It will doubtless interest your readers to know that, so far as the material is concerned, the Knickerbocker Trust Company building in New York, illustrated in your issue for April 13th, is probably the most expensive structure that has ever been erected in America, and it is doubtful if the building annals of the entire world can show many instances to match it. The walls, from foundation to parapet, together with the steps, platforms, columns and carved ornamental work, are of statuary marble from Vermont, of what is known as No. 2 grade. This is the finest grain, and while it is not equal to No. 1 in colour, there is scarcely the faintest trace of clouding or veining. The statement is made on unim-

peachable authority that the price paid for this stock was 3.60 dols. (15s.) per ft. cube. In order to afford a comparison it may be said that the ruling price for the best grades of building marbles in New York City is 1.25 dols. per ft. cube. Architects and builders are occasionally willing to pay 1.50 dols. per ft. where a particularly "white" job is required, and it is reported that the Vermont quarries received 2 dols. per ft. for the marble in the new Chamber of Commerce, a semi-public building of elaborate design and beautifully ornamented with statuary in Italian marble.

While no one can deny the beauty of this material considered merely as a marble, there is a question as to its appearance after weathering in the building. Some experts declare that it will not show quite the life that would be presented by a stone more coarsely crystalline and with a touch of colour. Its endurance under the severe American climate also remains to be determined.—Yours truly,

FRANK W. HOYT,
 Editor, "Stone Magazine."

[Mr. Hoyt very kindly sends us a piece of this marble cut from a block that was being laid as one of the outer steps in front of the building. It is of a beautiful white colour, but looks more like salt than marble. It can be broken easily and crumbled between the fingers, so that if this is a sample of what has been used we should not expect the building to last long.—Ed. B. J.]

Statutory Qualification and the R.I.B.A.

To the Editor of THE BUILDERS' JOURNAL.

SIR,—I trust that you will permit me to attempt to deal with some of the misapprehensions which appear to envelop this subject, and to justify the position of our Committee in its relation thereto.

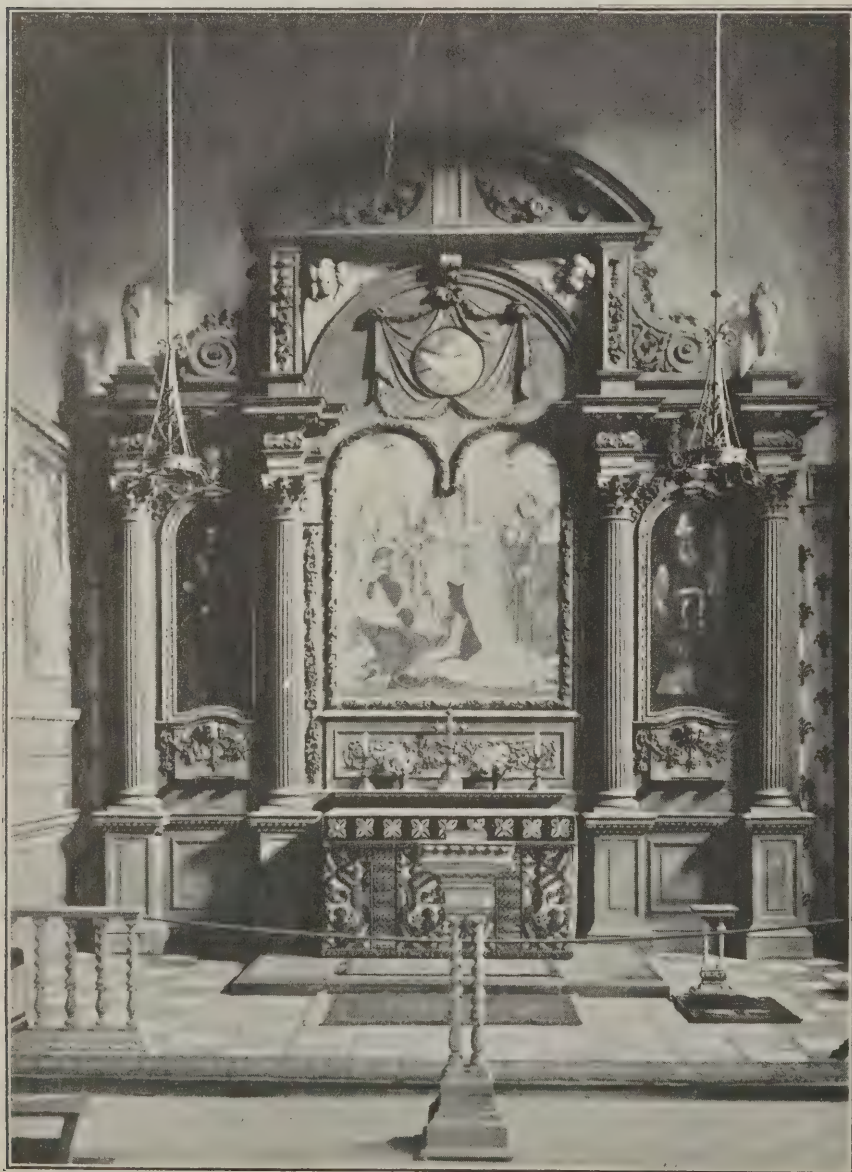
I will refer for a moment to a small matter upon which much has been said. Five members of the Institute Registration Committee were also members of our Committee. Of these, two only have resigned, and the other three remain as most active and energetic supporters. Of the three who resigned after we took our poll (the two above named and one other) two had never attended any meeting of our Committee at all, and the third was not present at the meeting in question. They therefore were not very good judges in the matter, not being in touch with the reasons which prompted our action nor in possession of the knowledge which influenced it. There is no difference of opinion amongst us, and we are working with the utmost unanimity towards a fixed goal.

In your issue for last week you describe the matter as "the question of the moment." It undoubtedly is, but I think we may fairly ask, Would it be so but for the action of our Committee?

Our opponents appear to have no conception as to how widespread and deeply rooted is the desire in the profession for statutory qualification. Could they but see the scores of letters which we have received from members of the Institute, both in London and the provinces, they would be astonished, if not converted. Opinion in the allied societies and amongst architects not attached to any society is exactly the same.

The time has clearly gone by for considering whether statutory qualification is desirable or not, for the great majority of architects have already decided that point for themselves. It would seem that all that is now left to be done is to endeavour to frame a fair and workable Bill, and then for the whole profession, led by the R.I.B.A., to endeavour to get it passed into law.

We are told that the "art architects" (a most pretentious term) oppose us; this, however, is not the fact. Some few oppose us,



REEREDOS NOW IN NORTH AISLE, OF ST. GILES, CRIPPLEGATE, E.C.



CHANCEL SCREEN NOW IN ST. MARGARET'S, LOTHBURY, E.C.

but for each one who does so we could name two or three equally good men who support the movement.

The contention that a man cannot be examined in art is not tenable. There is a certain reasonable standard to which all claiming to be called architects should reach, and such a standard, fixed by fair-minded and capable men, would not be difficult to determine. To pass this standard would not prove a man to be an Inigo Jones or a Wren, but it certainly would not prevent him from becoming one, as our opponents appear to argue. Further, the passing of the standard would ensure the public from being practised upon by absolutely ignorant charlatans, as is now constantly the case.

Nobody contends that the capacity of associates of the R.I.B.A. is cramped or reduced by reason of their entrance examination, and it is common knowledge that although all have passed the same tests there is a very great difference in their respective ability and attainments. This is fully recognized both in the profession and by the public. How then will an entrance examination to the profession reduce all architects to a dead level of mediocrity?

All doctors are not equal in capacity, nor all solicitors, although all pass the same qualifying examinations in their respective professions; the cleverest men are soon recognized and infallibly come to the front. Because some of those who pass possess a

rather limited capacity, this does not prove that examinations are unnecessary.

The "art architects" object to the registration of incompetent men for fear they may be classed with them. This is to a certain extent unavoidable. We cannot take away a man's living by Act of Parliament. But this is a difficulty that has had to be faced by other professions, and it is one which would be lessened each year.

Have we no *esprit de corps*? Are we so utterly selfish that we care nothing for our profession and its future, and think only of ourselves and the present? Are we to judge matters which most vitally concern the whole of our profession from a personal and private standpoint? Should an architect of position stand in the light of professional progress because he may consider that his personal dignity is touched by his being bracketed with an inferior man? On the contrary, should we not rather all work harmoniously together in a broad-minded, enlightened and unselfish spirit for the advancement of architecture, the good of our profession and the advantage of the public?

Our opponents forget that while they so strongly object to the pretender being registered (a purely egotistical reason), he still exists and practises and is called an architect whether they like it or not. He will still only be called the same if the Act is passed, and time will wipe him out.

Further, is it logical to require a qualifying

examination for entrance to the Institute and not to require it for entrance to the profession of which the Institute is but a part? If a man is not good enough to enter the Institute without examination, he is not good enough to enter the profession itself without proving his capacity. The Institute cannot be greater than the profession. If it is possible to examine for the associateship, it is possible similarly to test the knowledge of all intending architects.

The standard of the men composing our profession is being constantly lowered by the admission of all who choose to enter, although they may be without education or qualifications of any kind. Our ranks now include carpenters, masons, coal merchants, law clerks, undertakers, jerry-builders, house agents and men of all descriptions whatsoever. The result is most prejudicial to architecture and most damaging to the educated man of a better class. Such a man finds himself included with people of the above description whose business methods are not always guided by the standard which a gentleman follows, and whose ways of getting and doing business do not always redound to the credit of the profession.

We have only the good and the repute of our profession in view, and we trust that in our now pushing this question to the front posterity will endorse our action.—Yours truly,

W. GILBEE SCOTT,

Hon. Secretary to the London Committee of Members of the R.I.B.A. for promoting the Statutory Qualification of Architects.

[We agree with the general tenor of Mr. Scott's remarks, but hardly think his committee is the Bayard of registration; he infers it to be; others have done something.—Ed. B.J.]

To the Editor of THE BUILDERS' JOURNAL.
LONDON, E.C.

SIR,—In view of the circular letter, dated May 5th, issued by "The London Committee of Members of the R.I.B.A. for promoting the Statutory Qualification of Architects," with a list of names approved by that Committee as candidates for election to the Council of the R.I.B.A., permit me to state that, although my name is included in the list, and although, as I at present view the subject, I am in favour of the principle of statutory qualification, I am nevertheless under no pledge to any person or party, and as to the future I reserve absolute freedom of action and discretion in dealing with the subject. In any case it appears to me much to be regretted that this question should have been raised as a party cry in the election of the Council at this time, and in advance of the report upon it which we are awaiting from the Committee of the R.I.B.A. I would add that had I known beforehand the nature of the circular letter as issued and expressed I would on no account have permitted my name to appear in it.—Yours truly,

W. H. ATKIN BERRY.

Royal Academy Exhibition.

To the Editor of THE BUILDERS' JOURNAL.
NORWICH.

SIR,—In your remarks on our design for the Norwich Union Life Assurance Society's new head offices, exhibited at the Academy, (No. 1633), you say: "The design reminds one of their Norwich Opera House." You are in error in supposing that this was designed by us, as Mr. Sprague was the architect. May we add that our design for the Norwich Union Life Assurance offices was prepared some time prior to the design for the Norwich Opera House, but being built wholly of stone, and with an extensive use of marble in columns, &c., internally, has taken a longer time to complete than if inferior materials had been used.—Yours truly,

GEORGE J. & F. W. SKIPPER.

EDINBURGH ARCHITECTS AND THEIR EDUCATION.

IN view of the proposed reorganization of art education in Edinburgh a memorial on the professional education of architects has been prepared for presentation to the Town Council by the associate section of the Edinburgh Architectural Association. (This section, which includes practically the whole of the architectural students in Edinburgh, has 111 members on its roll, of whom fifty-one are pupils or associates and sixty are draughtsmen.) The memorial gives particulars of the facilities afforded to architectural students in London, where courses are held by the Architectural Association, the Royal Academy, University College and King's

hand, there is no systematic course of instruction in architectural history and detail, in the professional practice (including law) of architects, or to any extent in design and planning. There is no attempt to prepare students for the examinations of the R.I.B.A. or of kindred bodies. We think the provision of such teaching the most pressing need of the present moment. The principal professional examinations in the kingdom are those of the Royal Institute of British Architects qualifying for candidature as associates (A.R.I.B.A.). These examinations cover technical, historic and artistic work. The first and last are well provided in Edinburgh; the second has always been a source of difficulty to Edinburgh students, who are driven to expensive correspondence classes of doubtful value, or to unaided

that as far as possible it should be controlled and taught by architects in practice, and that lectures on architectural history and the details of the historic styles should form an important part of the curriculum, in addition to the technical and artistic training at present provided. We think these courses of lectures should be three or four in number, given by special lecturers, who might also be architects in practice, though not to the exclusion of all others. The courses should be divided into technical courses dealing with the study of particular buildings and the mouldings and forms of the historic styles, and history courses dealing with the development of architectural history in a larger manner. Two courses in each—an elementary and an advanced—should be provided. More extensive instruction in design and planning is urgently required. Some elementary instruction in the legal questions affecting architects should also be given. We think it desirable that a joint curriculum and diploma should be arranged between the various bodies in Edinburgh, and that this curriculum should be arranged to cover the requirements of the R.I.B.A. and similar examinations. The above arrangements would prevent overlapping and provide a definite course of study. We think that the architectural school should be brought into close touch with the profession through the Architectural Association."

In conclusion, the memorialists testify to the value of the instruction at present given by the Heriot-Watt College, and more especially by the School of Applied Art under Sir R. Rowand Anderson. They consider that the system under which the School of Applied Art is administered—direct control by practising architects—to be by far the most efficient, and think that an enlargement of this school on the lines indicated would be the simplest and most satisfactory method of supplying the needs of architectural education in Edinburgh.

A party of members of the Association journeyed to Dunfermline recently for the purpose of viewing the abbey and the new Carnegie baths and gymnasium. At the north porch of the abbey the various changes of style were explained by Mr. Hippolyte J. Blanc, who ventured the opinion that the generally assigned date of 1070 could scarcely be supported, in view of what was known to have been the practice in architecture in Scotland at that time. He pointed to several details as bearing evidence of the structure belonging to the early part of the twelfth century. Special attention was drawn to the doorway newly opened-out in the south wall, Mr. Blanc remarking that from the capitals it doubtless formed one of the accesses to the cloister of the original abbey buildings, and expressing the hope that the doorway would be fully opened out. Mr. Blanc is the architect of the Carnegie baths and gymnasium.

Ormskirk Grammar School is being enlarged at a cost of about £5,000. The extensions will considerably increase the size of the buildings and will provide accommodation for 125 mixed scholars. The existing building is being converted into chemical and physical laboratories, &c. The new building is two storeys in height, and consists of a central hall with five classrooms. The principal elevation is faced with local stone from the same quarry as that in the existing building, the other elevations being in St. Helens bricks. The ventilation will be carried out by means of Tobin's inlet tubes and Boyle's extractors assisted by extractors into flues in chimney stacks; the heating will be by low-pressure hot water by means of radiators. The architect is Mr. Frank Rimmington, of May Buildings, North John Street, Liverpool, and the contractor is Mr. James Whittle, of Ormskirk.



LECTERN, ST. MARGARET'S, LOTHBURY, E.C.

College; in Birmingham, where there is a municipal school of art; in Liverpool, where the University gives a B.A. degree with honours in architecture after a three years' course and a certificate after a two years' course; in Manchester, where there is a degree-conferring school of architecture; in Glasgow, where classes are held at the Technical College and at the School of Art. In most of these institutions the requirements of the examinations for qualification as A.R.I.B.A. are kept in view. In regard to Edinburgh, the memorialists think both the Heriot-Watt College and the School of Art worthy of support. The former, however, "suffers from inadequate accommodation, but, so far as it goes, it is very highly valued by students. The scope of the work is, however, not extensive enough. On the other

private reading in place of the systematic training given elsewhere. Architectural history and historic detail cannot be taught in the hurry of office-work. Professional practice is not taught in any way. The number of students entering for the R.I.B.A. examinations is increasing every year, and it is significant that of those passing the preliminary (a general knowledge examination) only a small proportion ever pass the intermediate (the first professional examination) and very few the final examination, no doubt on account of the difficulty of obtaining instruction.

"We think it important that in any reconstruction of art education the architectural school should be kept a distinct section of the general art school, under its own director, who should be an architect;

R.I.B.A.

The Planning of Collegiate Buildings.

A MEETING of the Royal Institute of British Architects was held on Monday evening last, the chair being occupied by Mr. Aston Webb, R.A.

Mr. Alexander Graham announced the deaths of Mr. Norman Michael Brown, of Newport, Mon., elected an Associate in 1867 (see p. 240); Mr. Francis W. Tasker, of London, elected an Associate in 1874 and a Fellow in 1893; and Mr. G. H. Birch, F.S.A. (see p. 239).

Mr. Webb announced that the Council had decided to form a Board of Defence to which members of the Institute could apply for the opinion of counsel in respect of legal questions of importance to the whole profession. A list of the members constituting it, and the conditions under which application can be made to them, will be announced later. Such a committee has existed in France for years past.

Mr. Webb also stated that the Council had appointed a Board of Education to co-ordinate existing architectural facilities and formulate a comprehensive system.

A paper on the planning of collegiate buildings was read by the Rev. J. B. Lock, M.A., Fellow and Bursar of Gonville and Caius College, Cambridge.

The author opened his paper by a reference to the colleges that have come down to us from the fourteenth and fifteenth centuries, which were all built on much the same plan, the various parts being grouped round an enclosed court. The buildings were never more than two floors in height. To the lowness and narrowness characteristic of them the author attributed the beauty and feeling of rest that seems to pervade the old courts. The free admission of sunlight and air into the courts is also secured by keeping down the height of the buildings. When Dr. Caius enlarged Gonville Hall by building what is now called Caius Court he bounded his court on the south side by a wall broken only by the insertion therein of his beautiful Gate of Honour, and in his statutes he expressly forbade the erection of any building which should completely enclose this court on the south side "lest the air from being confined within a narrow space should become foul."

The old arrangement by which the buildings were in general only one room deep caused the kitchens, &c., to be placed at one end of the hall, which had the advantage of keeping the odours of the cooking to some extent out of the hall. At the kitchen end of the hall it was customary to have a passage going right through the building, and cut off from the hall by a screen with a gallery above. In modern times the passage has in many cases become a thoroughfare leading from the old court to newer courts beyond, with the consequent disadvantage that all the kitchen service now passes across the busy thoroughfare. The position of the hall recently built at Girton College is obviously convenient. It is placed at some distance from the students' rooms, and is approached by the students from two directions, through an enclosed passage or cloister opening into the hall on its south side, while the kitchens are placed in a separate building on the north side of the hall.

In the olden time the master simply had his one or two rooms in which he lived, a bachelor. In modern times the master requires a good house with all the offices and belongings of a modern residence. So that the lodges of our day are either curious and interesting conglomerations of buildings gradually annexed or added by successive masters, or are brand-new modern mansions built on detached sites.

Coming to the Fellows' and Students' rooms, the plan of the sets of chambers or men's rooms in the ancient building was a very simple matter. The building was merely sliced up by the insertion of stacks of chimneys and wooden partitions, with staircases of one flight at the proper intervals. In colleges at the present day ranges of buildings containing living-rooms have to be divided up into sets, each set containing at least one sitting-room, a bedroom and a pantry or gyp's room.

The following points should be borne in mind with respect to a set of rooms. Usually each set should be enclosed by a stout door, called the oak or sport-door. The sitting-room should have some sunlight. The bedroom should have not less than 100 sq. ft. of floor spacing, plenty of window space that can be opened, a place for the bed out of the draught, and a chimney and other means of ventilation. There should be provision for the passage of a current of fresh air through the rooms when the sport-door is closed; for this purpose the windows of the sitting-room and bedroom should not all face the same way. The author went on to consider how these points could best be obtained.

Economy of space in nearly all cases demands buildings of three floors and an attic, and the colleges nearly always ask that at least eight sets of rooms shall be provided on each staircase. The arrangement of four sets of rooms on each floor approached by one staircase would have many obvious advantages if a plan could be devised free from objections, but this is not easy. In the only instance the author knew of in which it had been adopted at Oxford or Cambridge the plan had so many hygienic defects that it could not be said to be successful. There was no possibility of a through ventilation of any one of the four sets of rooms except through one of the others; the passages were without direct light or ventilation; the scout's hole was outside all the sets of rooms; the lobby was badly lighted and badly ventilated, and was larger than was necessary.

As to what is the best typical arrangement of sets of college rooms, the author had made a careful comparison of plans adopted in recent times at both Oxford and Cambridge, and had come to the conclusion that the plan recently adopted, quite independently, by Mr. Champneys at New College, Oxford, and by Messrs. Aston Webb and Ingress Bell at Gonville and Caius College, Cambridge, was one of the best.

Showing plans of St. Michael's Court, Caius College, the author described the arrangement. The building faces south-west towards a narrow court. The staircase is on the north-east, and is approached from the court through a passage about 4 ft. wide. On the ground floor on each side of this passage is a set of rooms, of which the keeping rooms face south-west, the bedrooms north-east; the gyp-rooms also face north-east (a good aspect for a pantry). When the sport-doors are shut the opening of a window in sitting-room and bedroom, one on each side of the building, gives excellent ventilation. The staircase is thoroughly well-ventilated; with a window open on the staircase air can blow right through the building from the entrance passage to this window. On the first floor, as the space over the entrance passage is available, the whole frontage to the south is at disposal for division between the two sitting-rooms. In the plan adopted at Caius College the space over this passage is all thrown into one room, making the rooms on each side of unequal size; at New College, Oxford, this space is divided equally between the two sitting-rooms.

Comparing plans of modern buildings, the author pointed out one or two objections to the arrangement adopted in the new buildings of Tree Court at Caius College. One

is that the gyp-room opens directly on to the staircase landing and is not included within the sport-door. A more important objection is that the staircase has no independent through ventilation.

The rule that a court set aside for sets of rooms only should have no buildings on its south side has been very generally observed in recent additions to colleges at Oxford and Cambridge, so that these additions have usually taken the form of a straight line, or of an L, or of a U.

It has been the custom at Oxford and Cambridge in planning out the allotted space into sets of rooms to practically choose a certain arrangement and then repeat that arrangement on each staircase. In the recent work at Caius College, however, the irregularity of the site was such that uniformity of plan could only be attained by sacrifice of space, and the authorities had to determine how far irregularity of plan was objectionable. In the end they decided that it was desirable rather than otherwise, and the architects were instructed to give as much variety in size and shape (within certain limits) of the rooms as they conveniently could. The result in the new court at Caius is that there are hardly two sets of rooms out of fifty which are exactly alike.

The irregular site of St. Michael's Court is practically an L with an angle at the corner of about 120 degs., and the plan adopted by the architects seems a solution of the difficulty of how to deal with an L or U-shaped corner, provided it is not a condition that all rooms shall be rectangular. To illustrate the advantages of the arrangement the author showed this plan adapted to the first floor of the building in the corner of the Tree Court, Caius College, so that it could be compared with the existing arrangement. The new plan gives two sets of rooms, with sitting-rooms, each facing south-west, of very irregular but not uncomfortable shapes. The existing plan provides two sets of rooms which in size and shape are excellent, but one set has all its windows looking north. And as the building looks on to a narrow lane with high buildings on the opposite side, the rooms, notwithstanding their good size and shape, were not popular. The corresponding rooms on the ground floor were practically unsuitable for habitation, and were used as offices.

Three main points the author emphasized in the planning of college buildings, viz., (1) the desirability of having some sunlight in the sitting-room in all cases; (2) the importance of it being possible to set up a through current of air through every set of rooms independently of the staircase; (3) the desirability of having a through current of air through the staircase itself. The plan recommended provided all these advantages in rooms facing south or east or west.

A discussion followed. Mr. Basil Champneys mentioned that he had decided, as an experiment, to build a staircase external to the main block of a college he was now engaged upon; it saved much space—in this particular case 11 ft. on one side of a quadrangle and 22 ft. on the other. Mr. E. S. Prior said the modern collegiate building was virtually a collection of flats. The enclosed court had been found to be not the best arrangement: one side should be open to the south. Mr. Aston Webb also referred to this, but observed that the angles should be open as well, otherwise there could not be a proper circulation of air. St. Bartholomew's Hospital offered an example of this. A vote of thanks to the lecturer was proposed by Mr. A. W. S. Cross and seconded by Mr. H. G. Ibberson.

The adjourned discussion on the plenum system of ventilation will take place at the meeting to be held on June 6th, after the announcement of results of the annual elections.

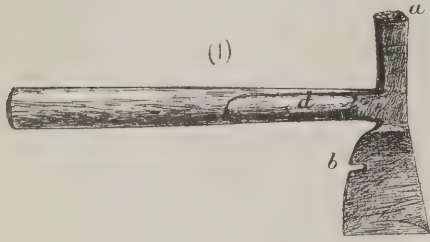
S.K. EXAMINATIONS, 1904.

BUILDING CONSTRUCTION.

Stage I.—Questions and Answers.

[You are permitted to answer only seven questions. The examination in this subject lasts for four hours.]

*1. What workman uses this tool? Can



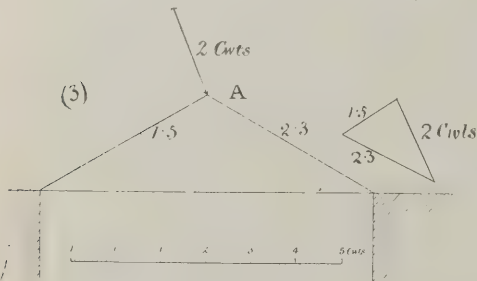
you give a reason for the grooving of the hammer face *a*? What purpose is served by the slot *b*? Why is the head of this hammer attached to the handle by cheeks *d*, not by a hole in the head? (12)

(1) A plasterer, for lathing. (2) The lath is held in place by the face of the hammer while the workman is taking a nail from his pouch or mouth; the grooves prevent slipping; the old kind of cast-iron nails were more certainly struck with a grooved face. (3) For drawing nails. (4) Leverage is put upon the handle of this hammer.

2. What are faucet, stopped bead, bolection moulding, banker, tuck pointing, rusticated, priming, joggle, going (of stairs), lintel, sectional elevation, architrave? Nine correct definitions will get full marks. (12)

For faucet, stopped bead, bolection moulding, tuck pointing, rusticated, joggle, going, lintel, see sketches. Banker, bench or seat on which stones are dressed; priming, the first coat of paint; sectional elevation, the elevation of a section supposed to have been made by a vertical plane; architrave—the lowest member of an entablature—the name given to the trimming round a door or window.

*3. The skeleton drawing shows two rafters tied at the feet by a ceiling joist:



copy it upon your drawing paper. Assuming that the joint at *A* is held by a smooth pin which is at right angles to the paper, find the stresses produced by the applied force, making use of the triangle of forces, and write the amount of the resulting stress in each rafter in cwts. and tenths along the line of the drawing corresponding to the particular rafter. (15)

See accompanying illustration.

4. Answer either (a) or (b), not both:—

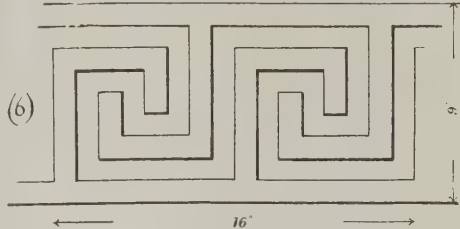
(a) A workman is dressing roofing slates. Describe how he divides a slate into two parts. (12)

(b) Sketch on your squared paper a straight line extending over 12 spaces: this line represents the edge of a roofing slate which is 24 in. long, the lap being 4 in. Mark on the line the position of the hole and dimension, its distances from the head and from the tail of the slate (the slate is not to be "nailed at the head"). (12)

(a) By making a row of holes with the pick of his zax along the line of division.

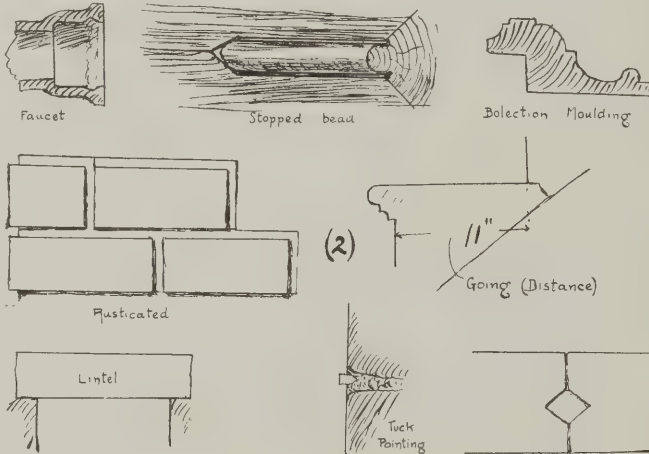
(b) See illustration.

*6. Make a tracing, in ink, of this ornament; trace also the writing and dimensions.



(The Indian ink should be sufficiently thick to give opaque lines suitable for photographic printing, the lines should be well defined, each line uniform in breadth, having firm unbroken edges; and they should neither stop short of nor be carried beyond the proper points) (14)

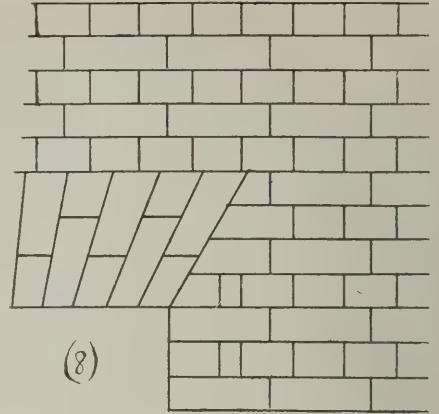
See illustration. Lines are in two thicknesses.



5. Answer either (a) or (b), not both:—

(a) Assume the distance between two lines of your squared paper to represent 1 in. Sketch upon it a tower bolt fastening attached to a door and door-post: it should be such a bolt as may be secured by a padlock. (12)

(b) To the same scale as for *a* sketch on the squared paper a hook-and-eye hinge for a stable door which opens outwards and lies



flat against the wall when fully turned to it: the door-post is 4 in. by 3 in., the reveal is 6 in. deep. (12)

See illustrations on next page.

7. Common window glass is specified as of 15oz., 21oz., &c. What do these weights refer to? What is this kind of glass called? (12)

(1) 15oz. per sq. ft. and 21oz. per sq. ft. (average). (2) Sheet glass.

8. What is a rod of brickwork? Sketch on your squared paper (assuming the distance between two lines to represent 3 in.) a top angle of a window opening showing, say, three courses of bricks down the reveal and about the same distance along the soffit, and extending three or four bricks' length horizontally from the reveal and the same distance upwards from the soffit. What do you call the bond which you show in the general facing? (15)

(1) 16½ ft. by 16½ ft. by 1½ bricks thick.

(2) See illustration above.

(3) English bond.

9. Answer either (a) or (b), not both:—

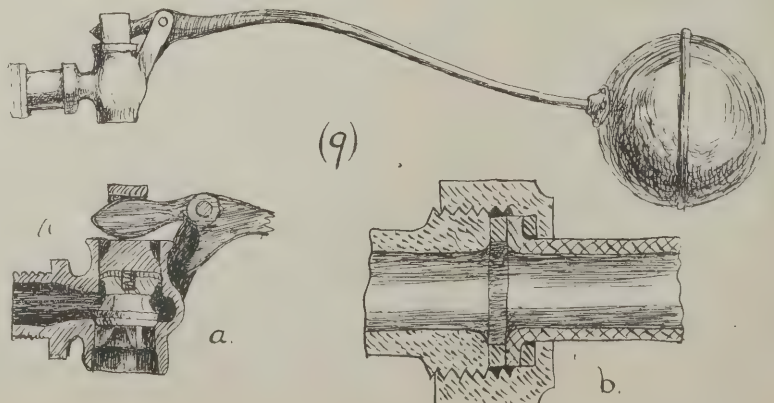
(a) Assuming the gauge of your squared paper to represent 1 in., sketch a side view of a ball valve for a water cistern. Show by sketches (enlarged if you think necessary) section of valve from which may be seen how the rising and falling of the ball shuts and opens the valve. (12)

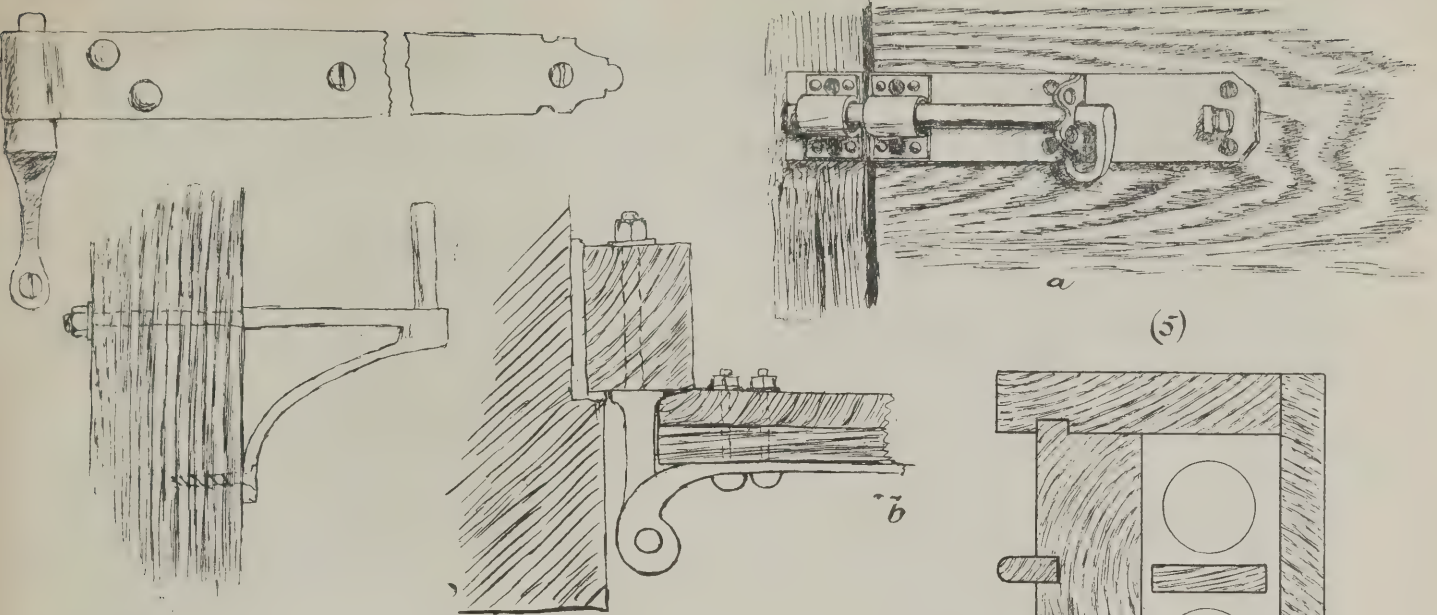
(b) Assuming the gauge of your squared paper to represent ½ in., sketch a section showing clearly a union connection of a brass ferrule to a tin lead pipe. (12)

See illustrations below.

10. Draw to the scale ½ a cross-section of the pulley stile and casing of a superior sash frame, 2 in. sashes: show the joints clearly; mark on the parts the end grain of the wood; show the weights and parting slip, back-lining, &c., complete. How do you fix the guard beads (window slips)? What advantage is claimed for forming a shallow rabbit (rebate) on the pulley stiles to form a seat for the guard beads? (14)

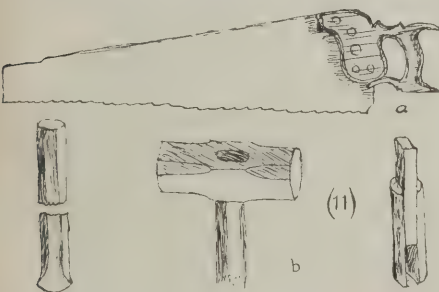
See illustration on next page. Guard





beads should be fixed with brass screws. The rabbit *a* settles the position of the guard bead, which might otherwise bear irregularly against the sash.

11. Describe how you would (a) divide a block of Bath stone into two useful pieces; (b) divide a block of granite into two useful pieces. Sketch on your squared paper the tools used in each case. (14)

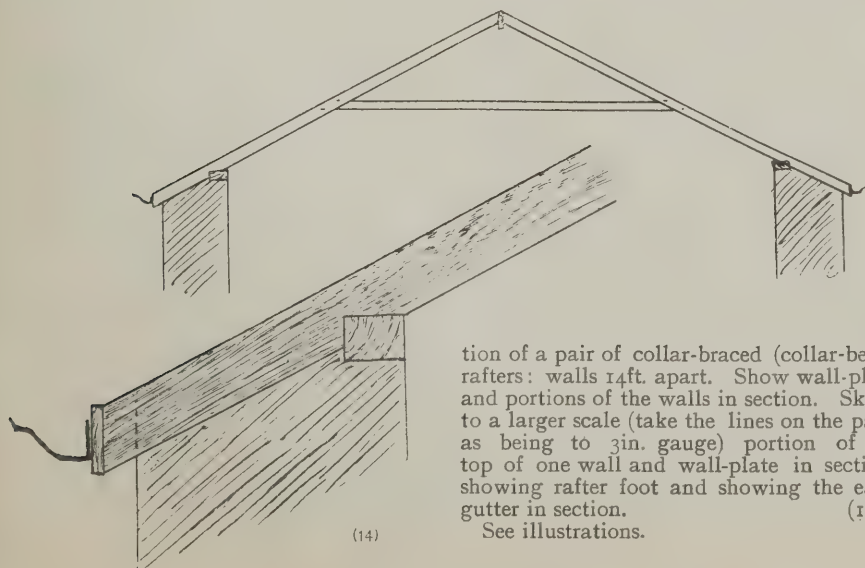


See illustrations. (a) With a hand-saw. (b) A row of holes is formed by means of a drill (or jumper) and a striking hammer, and the stone is broken along the row of holes by using plugs and feathers.

12. Describe fully the operations of opening a flagged yard; sinking a trench; laying gln. glazed stoneware spigot and socket pipes jointed with Portland-cement mortar; refilling the trench and reinstating the flagged yard (the ground is easy ground, no timbering is required). (14)

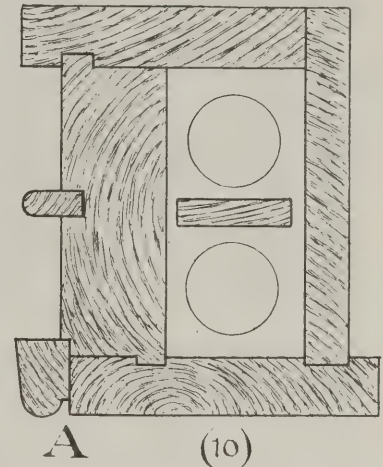
The flags are carefully lifted along the line of trench; they are set aside standing against a wall. A trench is sunk about 2ft. 6in. wide to the required depth; the bottom of the trench is dressed to the "fall" that is to be given to the drain; a uniform fall is worked by using boning rods; hollows are formed at the points where pipe joints occur, to enable the joint to be thoroughly and cleanly made; each joint is carefully filled in with the mortar, and a rake is used to clean off any mortar that may squeeze through to the inside; pipes should be laid in straight lines; a pipe-laying level adjusted to give the proper inclination should be used; boning rods may also be used to test uniform fall; the pipes should each be examined to see that they are sound, smooth inside, and well glazed; when they are properly jointed the earth should be properly packed round them, using fine dry mould next the pipes; the remainder of the trench should be carefully filled, rammed in layers, and any stones should be distributed in the filling, as may be advisable; hard filling, broken stones or bricks may be of advantage at the top to form a bed which will not settle under the flagging; the flags should be re-set on a full bed of mortar, if possible in their old positions; new flags dressed to the proper sizes of the same kind as the old flags should be used to complete where the old flags are broken or defective.

14. Sketch on your squared paper (assuming the lines to represent 1ft. apart) the eleva-



tion of a pair of collar-braced (collar-beam) rafters: walls 14ft. apart. Show wall-plates and portions of the walls in section. Sketch to a larger scale (take the lines on the paper as being to 3in. gauge) portion of the top of one wall and wall-plate in section: showing rafter foot and showing the eaves gutter in section. (14)

See illustrations.



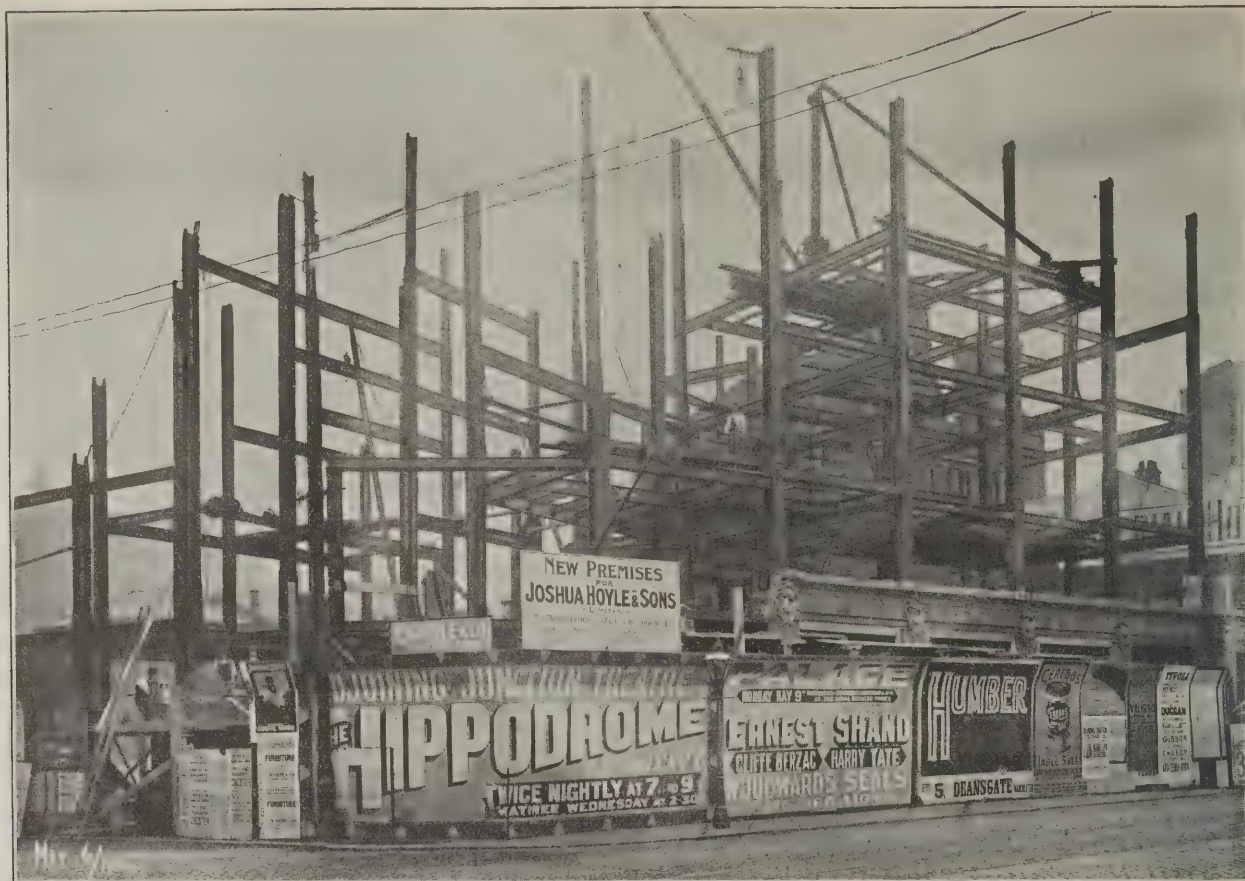
13. Under what circumstances would you put inverted arches in walls just over the foundations; and in what circumstances would you use arches not inverted in the foundations of a building? (14)

Inverted arches to distribute the load under openings, and where the load per unit of length of wall is small, and where the "ground" is uniform in "bearing"; arches not inverted where bad pieces of "bearing" have to be spanned.

Obituary.

Mr. George Henry Birch, F.S.A., died on May 10th at the age of sixty-two. He had been curator of Sir John Soane's Museum in Lincoln's Inn Fields since 1894, having succeeded the late Mr. Wyatt Papworth. The son of the late Dr. Samuel Birch, the distinguished Egyptologist, of the British Museum, he was born in 1842, and was articulated to Mr. Charles Gray, architect, in 1858, being subsequently with Sir M. Digby Wyatt and Mr. Ewan Christian. He became president of the London Architectural Association and Associate of the Royal Institute in 1875, and was the hon. secretary of the London and Middlesex Archaeological Society from 1877 to 1883. Mr. Birch designed the old London street in the Health Exhibition, and was Cantor Lecturer to the Society of Arts in 1883, and vice-president of the St. Paul's Ecclesiological Society. He published "The Old House in Lime Street, City," and "The Churches of London in the Seventeenth and Eighteenth Centuries." Mr. Birch took a deep interest in the antiquities of the metropolis, and formed a collection of London prints and drawings.

Mr. William Alexander, city architect of Dundee, died last week. He designed the addition to the Victoria Art Galleries, the hospital at the East Poorhouse (the largest of its kind in Scotland), the offices of the parish council in West Bell Street and the Carnegie branch library at Arthursstone Terrace. Prior to the prisons being placed under Government control Mr. Alexander



THE BUILDING OF HOYLE'S WAREHOUSE, MANCHESTER (Photograph taken on May 6th.) CHARLES HEATHCOTE AND SONS, ARCHITECTS.

was architect to the Forfarshire Prisons Board, and for many years also to the directors of the Royal Lunatic Asylum. Other buildings in Dundee associated with his name as architect are the electricity station in Dudhope Crescent Road, the public washing-houses, and Messrs. Lindsay & Low's large factory at Carolina Point. Permitted by the terms of his appointment as city architect to engage in private practice, he designed Her Majesty's Theatre, Dundee, and the Perth Theatre, and he was employed in transforming the Victoria Halls into the Gaiety Theatre. Mr. Alexander had considerable experience in arbitration under the Land Claims Act, and as a valuator he was employed in many important transactions.

Mr. W. Waterfield, brick manufacturer, Sedgley, died on May 10th at the age of forty-three.

Mr. John Baikie, senior partner of Messrs. Baikie & Peattie, builders and contractors, Bo'ness, died recently at the age of fifty-four.

Mr. George Handyside, builder and property owner, Newcastle, whose estate is stated to be worth nearly £1,000,000, has bequeathed £100,000 to the Newcastle Infirmary and other local charitable institutions.

Mr. Norman Brown, architect, of Newport, Mon., died recently at the age of forty-one after a lingering illness. His design for the new technical institute was selected in competition, but up to the present the Corporation has deferred proceeding with the building.

HOYLE'S WAREHOUSE, MANCHESTER.

THE illustration on this page, from a photograph taken from the Piccadilly side on May 6th, shows the rapid progress being made with the steel framework of this building and the rising-up of the ground-floor front.

Enquiries Answered.

The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

R.I.B.A. Examinations.

YORK.—ANXIOUS writes: "Please name some books suitable for the R.I.B.A. preliminary examination."

Consult the R.I.B.A. Kalender, published at 9, Conduit Street, W., price 2s. 6d.

Canada or the Army for Carpenters.

STOKE NEWINGTON.—SAPPER writes: "Kindly advise a young carpenter and joiner who has been out of his apprenticeship one year whether to go to Canada or join the Royal Engineers. I hold two building construction certificates. Would they help me for promotion in the Army?"

We should certainly think Canada would be preferable to joining the Army, for the reason that the former offers plenty of scope for quickly making your way, and so affording the opportunity of getting into business for yourself, whereas there is admittedly little encouragement for intelligence and push in the ranks of the Army, there being so few opportunities of advancement. With officers it is of course very different.

Damp Rooms.

WOODBRIDGE.—SUBSCRIBER writes: "Last year I built some bedrooms in the country with corrugated iron, timber and felt, lined inside with matchboards varnished, casement, and ventilation in the ceiling. The floor is of wood and is well ventilated; it is covered with cork floorcloth. The occupants are complaining that the rooms are damp. I think this must be due to condensation. If so, would it be remedied by canvassing and papering the rooms?"

If there were no concrete under the floor this dampness would be easily accounted for, but presuming concrete was laid, we can only suppose that the ventilation is not sufficient to prevent condensation. The timber, felt and corrugated iron make it practically airtight, and the only ventilation seems to be from under the floors when the doors and windows are closed. If gas stoves are used without flues they would of course only add to the trouble, as they produce much moisture.

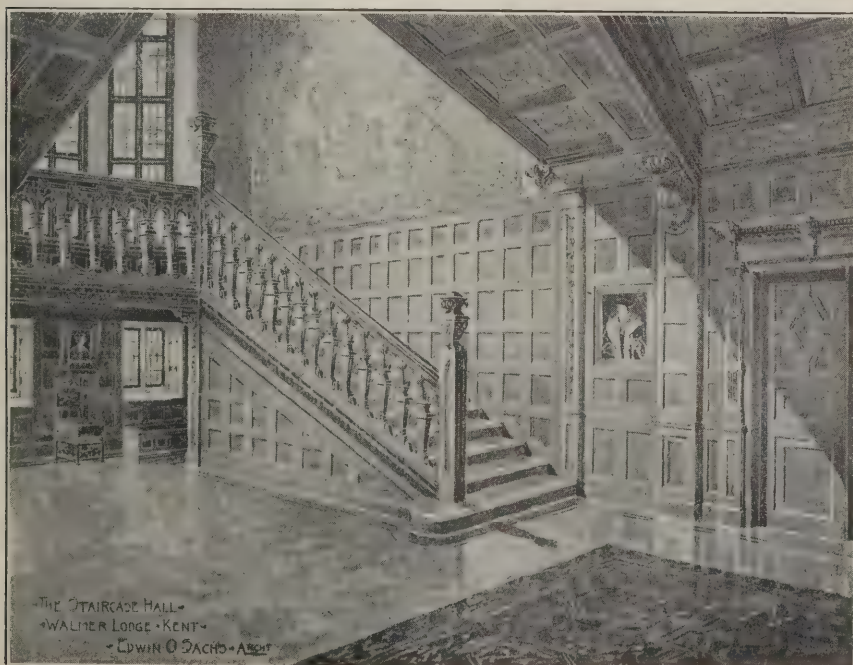
Outside Plasterwork.

MACCLESFIELD.—COUNTRY HOUSE writes: "What is the most satisfactory material to use for the plastered panels of black and white houses, gables, &c., (1) on brickwork, (2) on studding and laths? Portland cement is dark and will not take paint or colouring for a long time. Ordinary lime plastering does not withstand the damp and frost of our northern climate."

Probably the reason of the failure of lime-plastering is that the lime was not hydraulic enough. Stucco has stood in similar atmospheric conditions fairly well when good hydraulic limes were used. A fairly good white or cream-coloured surface can be obtained by using Portland cement in combination with white aggregates, such as silver sand, white spar, white marble sand or Bath-stone dust, as the finishing coat, composed of 2 parts Portland cement to 3 parts white aggregate, on a floating coat of Portland cement and sand. An extra white surface can be obtained by mixing the cement with a tenth part of well-sifted whiting, which should be well mixed in a dry state and then the silver sand or other white aggregate added and thoroughly mixed before the mass is gauged. The finishing coat should be finished with the trowel to get a close, smooth and impervious surface to allow rain to run off freely and to resist effects of rain and snow. A smooth surface also helps rain and wind to keep the surface free from dust. This will be suitable for putting on brickwork or studding and laths.

WALMER PLACE, KENT.

PENDING the modernization of the historic Walmer Castle, Lord Curzon (who now takes the place of Lord Salisbury as Lord Warden of the Cinque Ports) has rented Walmer Place, which adjoins the Castle grounds and was recently reconstructed, enlarged and decorated under the direction of Mr. Edwin O. Sachs at an expenditure of between £40,000 and £50,000. Walmer Place is beautifully situated overlooking the Goodwins, and replaces what was formerly Walmer Lodge. It stands in its own grounds, which have recently been laid out, and a notable feature is the beacon tower that has become a landmark in the neighbourhood. Mr. Sachs's instructions were to gut the worst portions of the existing building, to remodel the entire block, extend it, create a beacon tower, and thoroughly modernize and re-equip the building, providing it with such accessories as a complete hot-water heating installation, electric-light plant, fire service, &c. The disposition of the rooms is shown by the plans on the next page. The ground floor has an average height in the old part of 12ft. from floor to floor, and 13ft. 6in. in the new part. The hall, gallery and staircase are treated in light oak in English Renaissance style. The drawing-room is in the Louis XVI. style, the dining-room in Queen Anne style, and the billiard-room in Dutch style. On the first floor Mr. Sachs had to arrange a morning-room in the best position, and the necessary bedrooms for the family (which includes three children), together with tutor's room and maid's room. Besides these, spare rooms had to be provided—three double-bedded and one bachelor's room. Three bathrooms were introduced in suitable positions. The feature of this floor is a long passage or corridor extending from end to end, intended to be a useful "quarter-deck" walk in bad weather. The decoration of the first-floor rooms is of the simplest character, with whitewood fitments. The new wing alone was taken up to form a second floor, with servants' accommodation, and has been entirely devoted to this purpose, but the back staircase is continued up into the tower, from which a particularly fine view can be obtained. The height of the tower from ground to top of finial is 85ft.; the latter has an electric light and weather vane, and a large gong bell has been fitted in the



tower. The basement has been arranged so as to give easy service with a small staff when used for week-ends in the winter, and yet sufficient accommodation for large entertaining in the summer. Thus, there is a large kitchen and also a scullery kitchen, a pantry with a large servants' hall, which is also fitted for pantry purposes for entertaining, &c. Throughout the basement white tiles have been used, with blue paint, whilst all kitchen fitments are teak-topped and copper-lined. The electric-light installation, with fittings, also the hot-water appliances for heating and the hot and cold water services, are by Messrs. Strobe & Co.; everything else, including the decorative work, was undertaken by the general contractors, Messrs. Trollope & Sons, working under Mr. Sachs's instructions; Mr. Sachs being represented by Mr. Lister, his manager, and Messrs. Trollope by Mr. Parsons. It is interesting to note that in the course of excavations on the site of Walmer Place about two years ago a number of valuable specimens of Roman remains were found, including glass vases, terra-cotta work and coins. These have been carefully arranged, and now form an interesting exhibit in the principal hall of the building, for which Mr. Sachs provided special cases to fit in with the panelling.

Bricks and Mortar.

Aphorism for the Week.

Mankind forget what is unsuitable among the old: and by survival of the fittest, a body of tradition becomes a work of art.—R. L. STEVENSON.

Our Plates. This week we publish two more Academy drawings, Haggerston Public Baths (Mr. A. W. S. Cross, M.A., architect) and the First Church of Christ Scientist at Manchester (Mr. Edgar Wood, architect). The Haggerston baths are now nearly completed, the accommodation consisting of ninety slipper baths, a public laundry for sixty persons, and a swimming-bath roofed by 35ft. arranged on the amphitheatre system. We have a plan of the building in hand, but are obliged to hold it over till next week. Heating is by means of three Lancashire boilers in the basement, and a Green's fuel economizer, heaters, &c., are also provided. The contractors are Messrs. Kilby & Gayford. The total cost of the building will be about £60,000.

A.A. Dinner. THE annual dinner of the Architectural Association was held last Friday evening at the Criterion Restaurant, Piccadilly Circus, Mr. Henry T. Hare, president, occupying the chair. In replying to the toast of "The Royal Institute of British Architects," proposed by Mr. Hare, Mr. W. J. Locke, the secretary, congratulated the members on their new premises in Tufton Street, Westminster, and hoped the Institute would some day have a palace equal to it. Mr. J. S. Gibson proposed "The Architectural Association," coupling with the toast the name of Mr. Hare, who responded. Mr. Arthur T. Bolton, in proposing the toast of

"The Visitors," referred to the presence of Mr. T. Sudsuki (who is studying educational methods in this country on behalf of the Japanese Government) and his persistence in visiting the Architectural Association School to investigate the methods of teaching. He coupled with the toast the name of Prof. F. Edward Hulme, one of the instructors. Mr. Sudsuki thanked the Association for its courtesy to him, and said that when the Japanese had completely beaten the Russians several of his architect friends would no doubt come over to study architecture in England in the same way as the English fleet had been studied. Professor Hulme responded, and Mr. H. P. G. Maule proposed the toast of the Press, to which Mr. Plume and Mr. Raffles Davison responded.

Keystones.

Mr. J. J. Burnet is one of seven architects nominated by the Institute for the British Museum extension.

A new Fire-Station in Evelyn Street, Deptford, has been built by the Works Department of the L.C.C. at a cost of £10,350. It has accommodation for seventeen men, four horses, a steam fire-engine and a horsed escape.

Architects in Municipal Positions.—Among the architects at Kirkcaldy considerable dissatisfaction exists by reason of the fact that two members of their profession, Mr. William Syme and Mr. John D. Swanston, are acting on the Dean of Guild Court, and at the last meeting of the town council a petition was read objecting to this. The town clerk remarked, however, that the council had no

power to dismiss them from office, and the view was unanimously adopted.

Stockport's New Town Hall.—The foundations will be ready by July next, and it has been suggested that H.R.H. the Prince of Wales be invited to perform the ceremony of laying the foundation-stone.

Surveyors' Institution.—At the recent annual general meeting of the junior members Mr. W. S. Walker retired, and Mr. Sydney A. Smith, of 22, Chancery Lane, was elected hon. secretary. At the ordinary meeting which followed a paper on "The Junior Surveyor" was read by Mr. Smith.

Mr. Andrew Murray, F.R.I.B.A., the City surveyor, has sent in his resignation to the Corporation of London, and will retire on pension, having reached the limit of age. Mr. Murray entered the City's service in 1855 as a junior clerk, and rose step by step until he became the head of his department, succeeding the late Mr. A. Peebles in 1899 as City surveyor.

Fotheringhay Church.—An appeal is being made for funds to restore Fotheringhay Church, "a magnificent specimen of Perpendicular architecture," which threatens to become ruinous. The stonework has in many places split and perished, and the roofs have only been prevented from falling by the erection of scaffolding within the church. Mr. Temple Moore estimates the expense of repair at about £7,000.

Northern Architectural Association.—The members of this Association recently visited Mr. Milburn's huge block of new building in Dean Street, Newcastle, over which they were conducted by Mr. Wood, of the firm of Messrs. Oliver, Leeson & Wood, architect. Afterwards the party paid a visit to the Laing Art Gallery in New Bridge Street, which will be completed in two months' time. Messrs. Cackett & Dick are the architects.

British Fire Prevention Committee: Fables Wanted.—Through a generous donation by a Canadian member, the Committee are enabled to offer their gold medal and a purse of £20 for the best fable for children calculated to serve as a warning against the danger of playing with matches or fire. Two silver and four bronze medals will also be given as additional awards for meritorious essays. The fables are to consist of not less than 600 words nor more than 1,200, and are to be sent in by October 31st. The conditions can be obtained at the Committee's office, 1, Waterloo Place, London, S.W., on application, by letter only, enclosing a stamped addressed envelope.

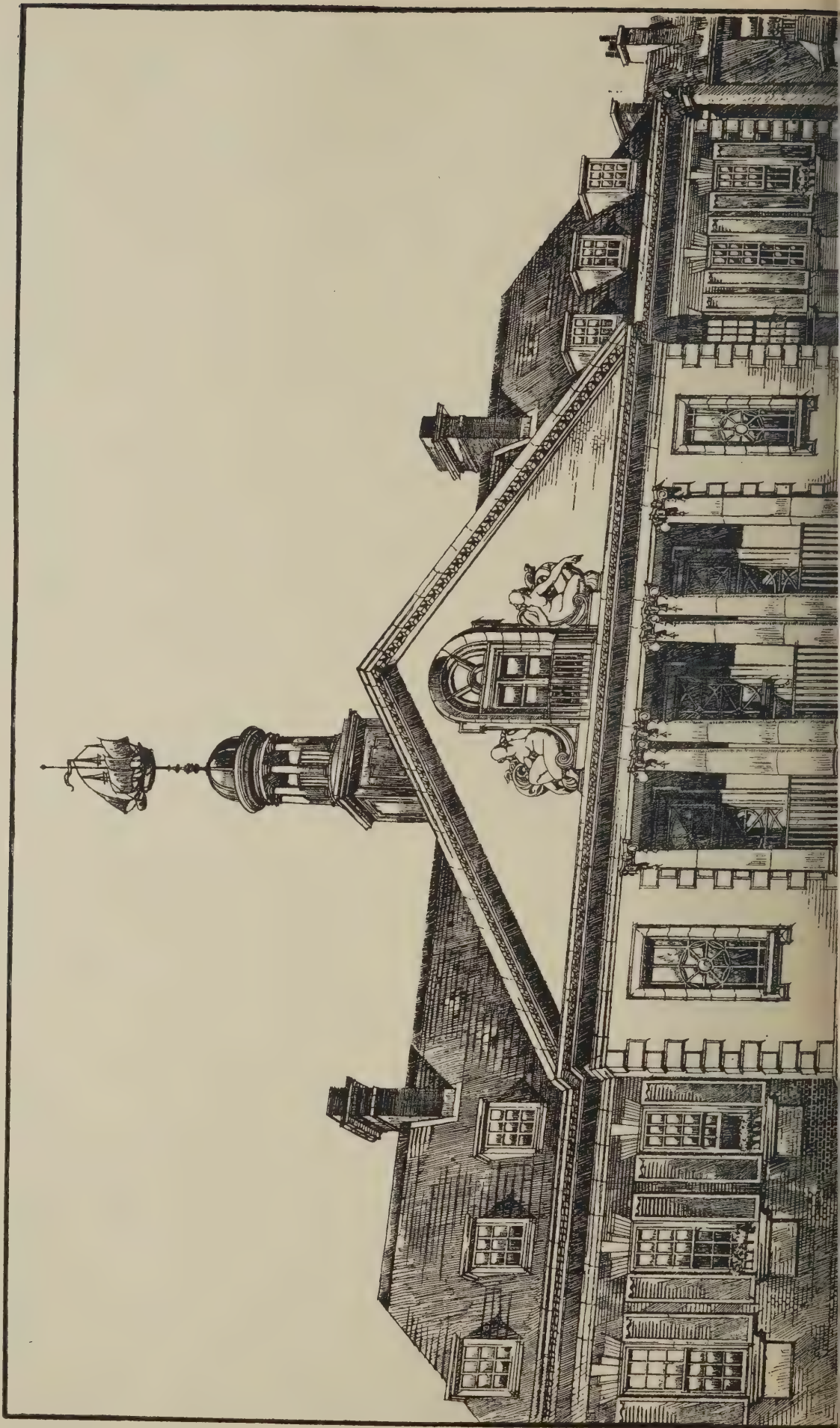
"Uralite" Competition.—The directors of the British Uralite Co., Ltd., 50, Cannon Street, London, E.C., offer fifty guineas in twenty prizes (the first prize to be not less than twenty guineas) for the best original design or practical suggestions for fixing "Uralite" (1) on the walls or ceilings of theatres, music halls and public buildings, in conjunction with both wood and iron; (2) both externally and internally to the roofs, ceilings and walls of temporary buildings, or portable structures intended for export and erection abroad. "Uralite" is manufactured from asbestos and mineral substances and is supplied in sheets 6ft. by 3ft., and in various thicknesses from $\frac{1}{16}$ in. to $\frac{3}{8}$ in. It is a good non-conductor of heat and cold, deadens sound most effectually, and is claimed to be the best fire-resisting material known. Sample together with lithographs showing the existing methods of fixing, will be sent free to all draughtsmen intimating to the company their intention to compete. Drawings are to be sent in not later than June 11th, and the awards will be made not later than July 2nd.

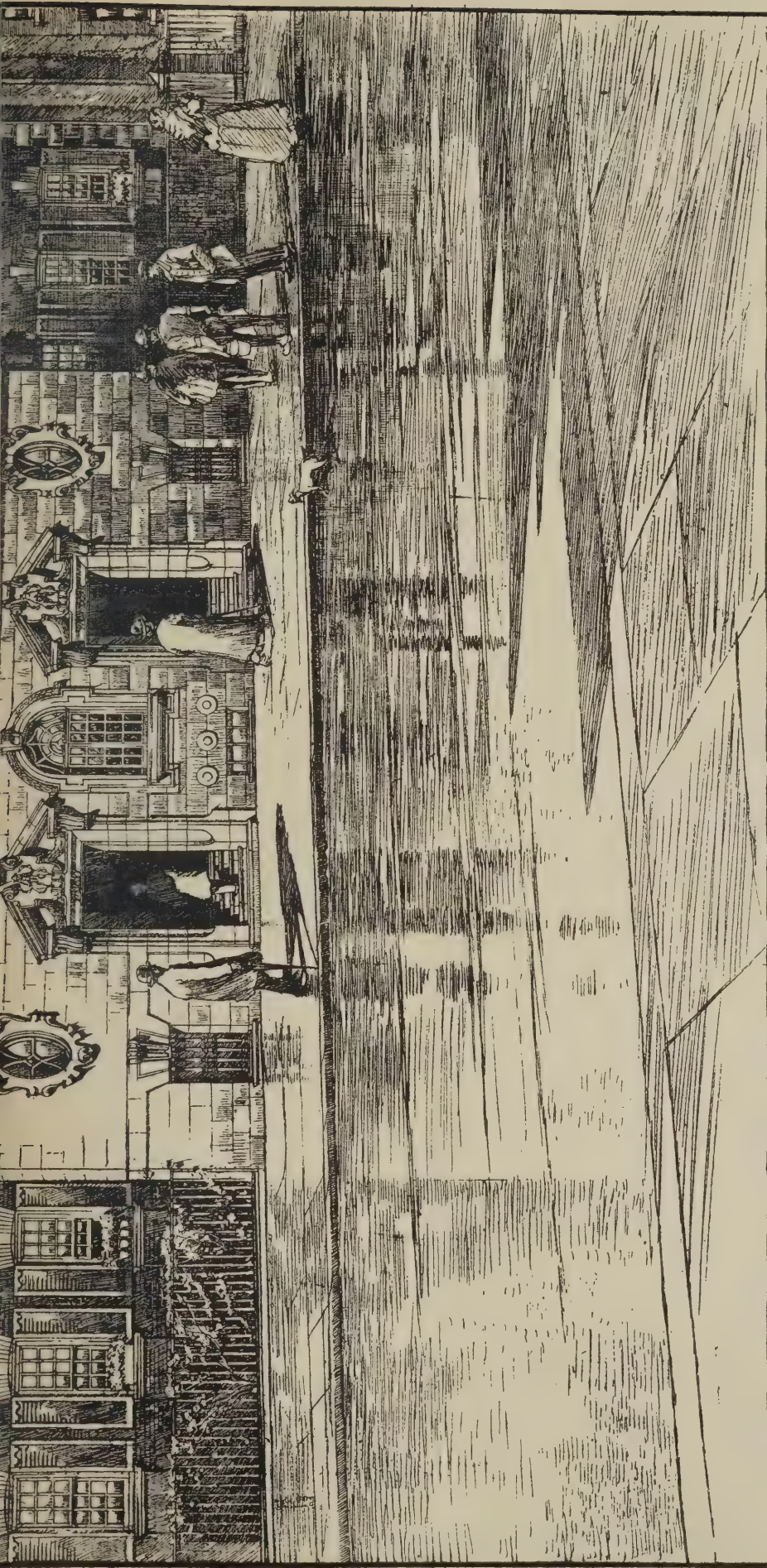


WALMER PLACE, KENT: PLANS OF GROUND FLOOR AND FIRST FLOOR, SHOWING ALTERATIONS. EDWIN O. SACHS, ARCHITECT.

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*Supplement to
THE BUILDERS' JOURNAL AND ARCHITECTURAL RECORD,
Wednesday, May 18th, 1904.*





HAGGERSTON PUBLIC BATHS

ALFRED W. S. CROSS, M.A. ARCHTCT.

(ACADEMY, 1904.)

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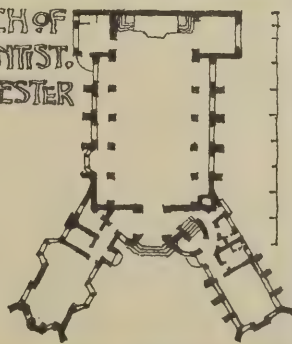
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FIRST CHVRCH OF
CHRIST SCIENTIST
VICTORIA PARK - MANCHESTER

EDGAR WOOD
ARCHITECT



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Trade and Craft.

The Columbian Fire-Resisting System.

In reviewing a well-produced catalogue recently published by the Columbian Fireproofing Co., Ltd., containing a number of illustrations of important buildings in various stages of erection, we may refer to the special features of this type of fire-resisting construction. The particular requisites in all building methods are economy and simplicity, for a good deal rests with the mechanics who have to carry out the work, and if they do not understand and fully appreciate what they are doing there will be a serious decrease of efficiency. The Columbian system has only a few special features, though these are radical ones, and their application is multifarious. The system consists in special ribbed steel bars shaped like a double-armed cross, thus \perp , suspended in steel stirrups over steel joists between main girders or resting on walls. By the use of heavy ribbed bars ordinary steel joists can be eliminated. The ribbed bars are in every case surrounded by and com-

pletely embedded in concrete composed of the best Portland cement, sand and crushed furnace clinker or hard cinders. These bars utilize the full strength of the concrete by reason of their special shape. The thickness of the concrete and the depth of the bars are increased or diminished to suit the width of spans. The main girders or walls that carry the floors are very often erected as the building progresses, and the spans between them filled with heavy ribbed bars of proper depth and spaced to suit the strength required; the concrete floor is then constructed as the building rises at each floor. The spacing of the ribbed bars, which take the place of small steel joists, and the construction of the concrete floors, may however be deferred until the building has progressed several storeys or is roofed in. The feature which makes the Columbian floors so much an improvement on small steel joists spaced 2 ft. to 3 ft. apart and filled in with concrete, is that the ribbed bars have a greater carrying power when embedded in concrete (due to their deeper and more economical section) than three times their weight of ordinary steel joists, which of course were never designed with any idea of their being adapted to concrete floor construction, and further, on an average only about two-thirds the usual depth of concrete is required (in many cases where small joists are used it is necessary to use a great depth of concrete to fill to their tops). Another saving in steel is effected by resting the ribbed bars directly on the masonry without the use of a steel joist at walls.

In the Columbian system there are three forms of floors: (1) the panelled; (2) the double construction; and (3) the ribbed bar between main girders. In the first form all the joists and main girders are completely encased on the sides with solid concrete, and the underside is protected by slabs of concrete secured by concealed anchors turned down to clip the lower flanges of joists, which are so designed as to afford air-space. In this form 2 in. and 2½ in. ribbed bars hung in stirrups are used to carry 4 cwt. to 12 cwt. In the second type (the double construction) the floor is formed the same as in panelled con-

struction, but instead of the joists projecting below the ceiling line, in. ribbed bars are laid on the lower flanges of the joists and a wooden centering is placed below to receive a 2½ in. concrete ceiling formed around the ribbed bars, and under the steel joists, which latter are not spaced farther apart than 7 ft. This construction is particularly adapted for high buildings and heavy floors. In the third type a flat and level ceiling construction is formed between main girders or walls in buildings of moderate height by using the 3½ in., 4 in. or 5 in. ribbed bars between main girders or resting on walls; in this way the usual small steel joists are done away with. A small tie-joist can be used at columns if ribbed bars and concrete floor are not put in place when columns and main girders are erected; but in no case need the tie-joists be deeper than the concrete floor. This form of floor is suitable for such buildings as hospitals, asylums, workhouses, schools, apartment houses, hotels, &c. It carries from 1 cwt. to 3 cwt. per sq. ft., with a factor of safety of 4, but almost any strength can be obtained by a closer spacing or by using a deeper ribbed bar and more concrete. This



CONSTRUCTING COLUMBIAN FIREPROOF FLOORS AND COVERING COLUMNS.

form of floor is more economical than the first and second form. The illustration on this page shows Columbian floors in course of construction. At the top the main girders are seen, and at the bottom the ribbed bars in position with the centering under receiving the concrete to encase them. The floors are very strong, and a factor of safety is allowed which may be expected to meet any eventualities, but should the floors be subjected to great strain they cannot be broken down suddenly, for a deflection of several inches would give ample warning; but by this we do not mean that the floors are liable to deflection, because the adhesion of the concrete to the ribs of the bars and the locking of the latter between them supports and holds the bars in position and so prevents deflection. In designing steelwork for the third form of floor all that the architect need indicate on plans are the columns and main girders. The company will provide plans for the steel construction free of charge. Their address is 37, King William Street, London, E.C. The constructional steelworks, which they have recently found necessary to establish to deal with the increased volume of trade, are in Grove Road, St. John's Wood, W., and their concrete works are at John's Place, Castle Street, Kingsland, N.

Builders' Notes.

The Northern Counties Federation of Building Trade Employers have presented a silver bowl on stand to Mr. Walter Lowry, Newcastle, first president of the Federation.

Employment in the Building Trade during April continued dull, and was worse than a year ago, though better than in March. The percentage of unemployed carpenters and joiners was 6.1 and plumbers 9.7.

The new Workhouse Infirmary at Tyne-mouth is being warmed and ventilated by means of Shorland's double-fronted patent Manchester stoves with descending smoke flues, supplied by Messrs. E. H. Shorland & Brother, of Manchester.

Ingram House, Stockwell Road, London, S.W.—Messrs. Beaven & Sons, of 27, Victoria Street, Westminster, and County Buildings, Gloucester, are carrying out the plumbing, sanitary fittings, water mains, services and fire services in this building, illustrated in our issue for last week.

New Nile Bridges.—The Egyptian Government has decided to entrust the construction of the Nile bridges at Rodah Island, near Cairo, to Sir Arrol & Co., the builders of the Forth Bridge and present Tay Bridge. The Government has also decided to entrust to MM. Dayde & Fillet, the French engineers, the construction of two bridges in the Delta for the railway administration.

Scholarships for Young Decorators.—Through the generosity of the Wallpaper Manufacturers, Ltd., five scholarships of £20 each will be provided at the new School of Decorative Painting in Manchester. They are to be competed for by boys engaged in the painting trade. Three are allocated for England and one each for Scotland and Ireland.

Building Dispute at Stockton.—The master-builders of Stockton have been approached by the labourers, who with the bricklayers and plasterers are on strike, with reference to holding a conference, but have replied that as the labourers have previously refused the employers' requests for conferences they had no option but to make their own arrangements, and have opened their shops to any men who may apply at the following rates: Bricklayers' labourers, 6½d. per hour; plasterers' labourers, 6¼d. per hour.

Messrs. J. H. Sankey & Son, Ltd., of Essex Wharf, Canning Town, London, E., send us their new illustrated sanitary catalogue, just published, dealing with stoneware pipes, channels, intercepting traps, gulleys, &c.: these are made from selected and blended Devonshire and Dorsetshire clays, and are of superior quality and strength (tested by Messrs. Kirkaldy, the 4 in., 6 in. and 9 in. sizes stood an average crushing strain of over 4,000 lbs., the absorption being about 2 per cent.). Messrs. Sankey state that on receipt of a postcard they will be pleased to send to any reader the three sections of their catalogue—dealing respectively with sanitary goods, fireclay goods, and brick, cement, &c.

National Association of Master Plumbers of Great Britain and Ireland.—At the recent annual conference at Southport the mayor (Councillor F. W. Brown) pleaded for a more decorative treatment in plumber's work—a return to the fine craft of the old plumbers. The retiring president of the Association, Mr. T. A. Armitage, of Huddersfield, said they were all agreed that the only way to keep the plumbing trade efficient was to see that the future plumbers were not only trained in the workshops, but theoretically. Many a plumber might be able to carry out good workmanship without being able to see any reason why it should be done this way or that. Mr. W. Jaffrey, of Manchester, was elected president for the ensuing year.

Complete List of Contracs Open.

DATE OF DELIVERY	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
BUILDING:			
May 19	Quadrang, near Spalding—Villa and Farm Buildings	T. S. Betts	H. Kidd, Kirtton, near Boston.
" 19	Wareham—Three Cottages	G. M. Marston	W. W. Fookes, Architect, North Street, Wareham.
" 19	Preston—County Court Offices	Commissioners of H.M. Works, &c.	Secretary, H.M. Office of Works, &c., Storey's Gate, London, S.W.
" 19	Chelmsford—Shop Fronts, &c.	Star Co-operative Society	C. & W. H. Pertwee, Bank Chambers, Chelmsford.
" 19	Denby Dale, near Huddersfield—Villa	—	J. Kirk & Sons, Architects, Huddersfield.
" 19	Elgin—School	Co-operative Society	A. & R. McCulloch, 3 Bernard Street, Leith.
" 19	Sheringham—Shops	—	T. J. Goldie, Architect, Church Street, Sheringham.
" 19	Slaithwaite, Norfolk—Two Houses	Rev. T. J. Bowen	A. Shaw, Architect, Colcar.
" 19	Tormartin, Chippenham—Alteration, &c., to Rectory	Education Committee	C. E. Ponting, Diocesan Surveyor, Marlborough.
" 19	Brighton—Alterations to School	Industrial Co-oper. Society, Ltd.	T. Simpson & Son, 17 Ship Street, Brighton.
" 19	Heckmondwike—Six Houses	J. L. Roach	H. Stead, Architect, Heckmondwike.
" 19	Llandaff, Wales—House	Industrial Co-oper. Society, Ltd.	J. H. Thomas, Surveyor, Pentwyn, Llandaff.
" 20	Annfield Plain, Durham—Shop Fittings	—	G. T. Wilson, 21 Durham Road, Blackhill.
" 20	Chartham, near Canterbury—Repairs, &c., at Asylum	Town Council	W. J. Jennings, 4 St. Margaret's Street, Canterbury.
" 20	Croydon—Alterations to Eoller-house, &c.	Corporation	G. F. Carter, Borough Engineer, Town Hall, Croydon.
" 20	Ayr—Centering to Four Arches of Old Bridge	Parish Council	J. Young, Town Surveyor, Town Buildings, Ayr.
" 20	Cranleigh, Surrey—Mortuary	Guardians	F. W. Smith, Clerk, Brookdene, Cranleigh.
" 21	Cerne, Dorset—Repairs, &c.	Rural District Council	F. Feacey, Surveyor, South Walks, Dorchester.
" 21	Sligo—Galvanized Iron House	H. Sherwood	M. F. Conlon, Clerk, Courthouse, Sligo.
" 21	Goole—Two Houses	Urban District Council	H. Sherwood, Mount Pleasant, Goole.
" 21	Nuneaton—Schools	Guardians	H. Quick, 64 Hertford Street, Coventry.
" 23	Croydon—Padded Rooms	Gas Commissioners	F. West, 23 Coombe Road, Croydon.
" 23	Granton, near Edinburgh—Slaters' Works	Workmen's Hall and Institute	W. R. Herring, Chief Engineer, New Street Works, Edinburgh.
" 23	Llanhilleth, Wales—Public Hall, &c.	Education Committee	D. Lloyd, Architect, Llanhilleth.
" 23	Selby—Hospital Buildings	J. Quick	Tennant & Bagley, Architects, Pontefract.
" 23	Chelmsford—Workshops and Gymnasium at School	A. Knapman	F. Whitmore, 17 Duke Street, Chelmsford.
" 24	Creedy Barton, Newton St. Cyres—House & Farm Buildings	Rural Council	Ellis, Son & Bowden, Architects, Bedford Chambers, Exeter.
" 24	Exeter—House	Corporation	Ellis, Son & Bowden, Architects, Bedford Chambers, Exeter.
" 25	Bleicester—Rebuilding Arch	Wesleyan Congregation	J. W. Tubb, Highway Surveyor, Fewcott, near Bicester.
" 25	Oldham—Market Hall, Shops, &c.	Grammar School Trust Govrnrs.	Leeming & Leeming, Architects, Town Hall, Oldham.
" 26	High Bentham, Kendal—Chapel and Schools	Joint Hospital Committee	J. F. Curwen, 25 Highgate, Kendal.
" 26	Bingley, Yorks—School	Rural District Council	W. R. Nunns, Architect, Market Street, Bingley.
" 26	Newburn-on-Tyne—Hospital	J. G. M'Keever	T. Gregory, Architect, Newburn-on-Tyne.
" 27	Dromara, Ireland—Residence	Building Committee	Parochial House, Finniss, Dromara.
" 28	Thirsk—Isolation Hospital	G. Wood	C. McC. Swarbrick, Clerk, Thirsk.
" 28	Ardee, Ireland—Residence	Harbour Commissioners	F. Shaw, 36 South Frederick Street, Dublin.
" 28	Belfast—Hall	Joint Hospital Board	D. Coote, 6 Lewis Road, Belfast.
" 28	Fulford, York—Ten Houses	Commissioners of H.M. Works, &c.	A. H. Everist, 8 New Street, York.
" 30	Wilshire, Blackburn—Girls' Orphanage	Commissioners of H.M. Works, &c.	Briggs & Wolstenholme, Richmond Terrace, Blackburn.
" 30	Belfast—Timber Wharf	London County Council	G. F. L. Giles, Harbour Engineer, Belfast.
" 31	Biggleswade—Enlargement of Hospital	Corporation	H. Young, Architect, Maitland Street, Midland Road, Bedford.
" 31	Cheltenham—Enlargement of Post-Office	Penrhyber Navigation Colliery Co., Ltd.	Secretary, H.M. Office of Works, &c., Storey's Gate, London, S.W.
" 31	Barnet—Post-Office	Urban District Council	J. Wager, H.M. Office of Works, Storey's Gate, London, S.W.
June 1	London, S.E.—Brick Graves and Vaults, &c.	United Gaslight Co.	E. Wright, Town Clerk, Lewisham Town Hall, Catford, S.E.
" 2	Kawtenstall, Lancs—Library	—	J. Johnson, Borough Surveyor, Municipal Offices, Rawtenstall.
" 2	Penrhywceiber, Wales—Lime and Cement	—	Secretary, Company's Offices, Penrhywceiber, R.S.O., Glam.
" 4	Teddington—Public Library	—	H. A. Cheers, 35 Waldegrave Park, Twickenham.
" 9	Penzance—Hospital and Dispensary	—	O. Caldwell, Architect, Victoria Square, Penzance.
July 23	Rio-de-Janeiro—Theatre	—	Commercial Intell. Branch, Board of Trade, 50 Parliament St., S.W.
No date	Felixstowe—Two Houses and Shops	—	H. W. Buxton, Architect, Bank Corner, Hamilton Rd., Felixstowe.
ENGINEERING:			
May 19	Brighouse—Electric Cables	Corporation	Lacey, Sillar & Leigh, 78 King Street, Manchester.
" 20	Darlington—Engines	Corporation	G. Winter, Borough Surveyor, Darlington.
" 20	Wiveliscombe, Somerset—Waterworks	Urban District Council	T. V. Pearce, Clerk to the Council, Wiveliscombe.
" 20	Rugby—Electric Cable	Urban District Council	I. M. Wratislaw, Clerk, Benn Buildings, High Street, Derby.
" 20	Walthamstow—Tramcars	Urban District Council	J. Enright, 68 Lincoln's Inn Fields, W.C.
" 20	Ayr, Scotland—Electric Plant	District Lunacy Board	W. M. Stewart, 55 West Regent Street, Glasgow.
" 21	Tyldesley, near Manchester—Water Main	Urban District Council	J. B. Smith, Engineer, Council Office, Tyldesley.
" 21	Rugby—Sewer	Urban District Council	D. G. Macdonald, Surveyor, Rugby.
" 23	Grangemouth—Bridge Superstructure	Caledonian Railway Co.	Company's Engineer, Buchanan Street Station, Glasgow.
" 23	Glasgow—Electric Wharf Cranes	Trustees	G. H. Baxter, 16 Robertson Street, Glasgow.
" 24	London, N.—Pumping Machinery, &c.	Joint Drainage Committee	W. H. Prescott, 712 High Road, Tottenham.
" 24	Abergavenny—Electric Lighting Schemes	Asylum Building Committee	J. Glendinning, Medical Superintendent, Abergavenny.
" 24	Partick, Scotland—Electric Plant	Town Council	J. Donaldson, Town Clerk, Burgh Chambers, Partick.
" 25	Rothwell, near Leeds—Reservoir	Urban District Council	W. E. Richardson, Architect, Rothwell, near Leeds.
" 25	Doncaster—Rebuilding Bridge	Corporation	Mr. Craotree, Borough Surveyor, Doncaster.
" 25	Handsworth—Electric Lighting Feeders, &c.	Urban District Council	H. Ward, Clerk, Council House, Handsworth, near Birmingham.
" 25	Manchester—Electric Cranes	Dock & Warehouse Extension Co.	W. H. Hunter, 41 Spring Gardens, Manchester.
" 26	London, N.E.—Electricity Supply Mains	Hackney Borough Council	R. Hammond, 64 Victoria Street, Westminster, S.W.
" 26	Pontefract—Waterworks	Rural District Council	J. Waugh, Engineer, Sunbridge Chambers, Bradford.
" 26	Kilmarnock—Electric Plant	Corporation	Kennedy & Jenkin, 17 Victoria Street, Westminster.
" 28	Royton, near Oldham—Overhead Equipment	Hornsey Town Council	R. P. Wilson, 66 Victoria Street, Westminster.
" 30	London, N.—Electric Plant	Urban District Council	R. Hammond, 64 Victoria Street, Westminster.
" 31	Mexborough—Electric Plant	Lighting Committee	Consulting Engineer, Electricity Works, Mexborough.
June 1	Canterbury—Electrical Plant	East Indian Railway Co.	R. Hammond, 64 Victoria Street, Westminster, S.W.
" 1	London, E.C.—Engines and Tenders	Penrhyber Navigation Colliery Co., Ltd.	C. W. Young, Secretary, Nicholas Lane, E.C.
" 2	Penrhywceiber, Wales—Electric Lamps and Fittings	United Gaslight Co.	Secretary, Company's Offices, Penrhywceiber, R.S.O., Glam.
" 6	Sheffield—Gasholder	—	J. W. Morrison, Company's Engineer, Commercial St., Sheffield.
IRON AND STEEL:			
May 21	Tyldesley, near Manchester—Pipes	Urban District Council	R. H. Ginman, Water Engineer, Tyldesley.
" 27	Darwen, Lancs—Mains, Pipes, &c.	Gas Committee	A. H. Smith, Gas Engineer, Darwen.
June 2	Penrhywceiber, Wales—Stores	Penrhyber Navigation Colliery Co., Ltd.	Secretary, Company's Offices, Penrhywceiber, R.S.O., Glam.
" 6	Pontypridd—Stores	Gas Committee	E. Jones, Gas Engineer, Gasworks, Treforest, near Pontypridd.
PAINTING AND PLUMBING:			
May 21	Selby—Painting	Burial Board	E. Townend, Clerk, Abbey Place, Selby.
" 27	Dartford, Kent—Painting, &c., at Asylum	Metropolitan Asylums Board	T. D. Mann, Clerk, Board's Offices, Embankment, E.C.
June 2	Penrhywceiber, Wales—Paints, &c.	Penrhyber Navigation Colliery Co., Ltd.	Secretary, Company's Offices, Penrhywceiber, R.S.O., Glam.
" 6	Pontypridd—Lead and Compo, &c.	Gas Committee	E. Jones, Gas Engineer, Gasworks, Treforest, near Pontypridd.
ROADS AND CARTAGE:			
May 19	Carrickfergus, Ireland—Stones, &c.	Urban District Council	J. Boyd, Clerk, Town Hall, Carrickfergus.
" 19	Carrickfergus, Ireland—Footpath, &c.	Urban District Council	J. Boyd, Clerk, Town Hall, Carrickfergus.
" 19	Southend-on-Sea—Making-up Streets	Corporation	E. J. Elford, Borough Surveyor, Southend-on-Sea.
" 19	Turton, Lancs—Flags, &c.	Urban District Council	W. V. Laithwaite, Surveyor, Bromley Cross, near Bolton.
" 20	Brighton—Materials	Town Council	J. C. May, Borough Engineer, Town Hall, Brighton.
" 23	Ince, near Wigan—Granite Setts	Urban District Council	A. T. Swain, Surveyor, Council Offices, Green Lane, Ince.
" 23	Stevenage, Herts—Granite	Urban District Council	W. O. Times, Clerk, Council's Office, Stevenage, Herts.
" 23	Standish, near Wigan—Road Works	Urban District Council	Heaton, Ralph & Heaton, Civil Engineers, Wigan.
" 24	Leyland, Lancs—Materials	Urban District Council	Surveyor, 21 Fowngate, Leyland.
" 25	Ramsgate—Making-up Passage	Corporation	T. G. Taylor, Borough Engineer, Abdon House, Ramsgate.
" 26	Hampstead, N.W.—Wood Paving	Borough Council	O. E. Winter, Engineer, Town Hall, Haverstock Hill, N.W.
" 28	Hadleigh, Suffolk—Granite	Urban District Council	C. J. Grimwade, Council Offices, Hadleigh, Suffolk.
" 30	Witham, Essex—Granite	Urban District Council	W. B. Blood, Clerk, Witham, Essex.
" 31	West Hartlepool—Streets	Corporation	P. F. Dennis, Borough Engineer, West Hartlepool.
June 1	Windsor—Making-up, &c.	Town Council	Borough Surveyor, Alma Road, Windsor.
" 1	Perrinadoc, Merioneth—Road Repair, &c.	County Council	E. Vaughton, County Agent, Arthog, Dolgelly.

Complete List of Contracts Open — *continued.*

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
SANITARY :			
May 19	Edinburgh—Sewer	Magistrates and Council ..	Borough Engineer, City Chambers, Edinburgh.
" 19	Croydon—Sewer	Rural District Council ..	R. M. Chart, Surveyor, Town Hall, Croydon.
" 21	Rugby—Sewer	Urban District Council ..	D. G. Macdonald, Surveyor, Rugby.
" 21	Brighouse, Yorks—Sewers	Corporation	A. M. Fowler, 1 St. Peter's Square, Manchester.
" 23	Carlton, near Barnsley—Sewer, &c.	Rural District Council ..	J. Senior, Clerk to Parochial Committee, Carlton.
" 23	Stockport—Conversion of Pail Closets	Parks Committee	J. Atkinson, Borough Surveyor, Stockport.
" 23	Stanley, Durham—Sewer	Urban District Council ..	J. Routledge, Surveyor, Council Offices, Stanley.
" 24	East Grinstead, Sussex—Sewerage Works	Rural District Council ..	Bailey-Denton, Lawford & Symons, 9 Bridge Street, Westminster.
" 26	Uxbridge—Sewers, &c.	Rural District Council ..	J. F. Stow, Engineer, Corn Exchange, Uxbridge.
" 28	Walsall—Lime	Corporation	J. R. Cooper, Town Clerk, Borough Offices, Walsall.
June 4	Brandon Colliery and Littleburn, Durham—Sewer	Urban District Council ..	J. E. Parker, Engineer, Post Office Chambers, Newcastle-on-Tyne.
" 6	Pontypridd—Lime	Gas Committee	E. Jones, Gas Engineer, Gasworks, Treforest, near Pontypridd.
TIMBER :			
May 20	Genoa—Elm, Walnut, Ash and Maple	Italian Navy	Ministry of Marine, Rome.
" 23	Genoa—Mahogany	Italian Navy	Ministry of Marine, Rome.
" 28	Walsall—Creosote	Corporation	J. R. Cooper, Town Clerk, Borough Offices, Walsall.
June 2	Penthrilweiber—Timber	Penthrilweiber Navigation Colliery Co., Ltd.	Secretary, Company's Offices, Penthrilweiber, R.S.O., Glam.

List of Competitions Open.

DATE OF DELIVERY.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	DEPOSIT REQUIRED FOR CONDITIONS, &c.	FROM WHOM PARTICULARS MAY BE OBTAINED.
May 31	Stamford, Lincs—Public Library	£25, £15, £10.	£1 is.	C. Atter, Town Clerk, Town Hall, Stamford.
" 31	New Somerby, Grantham—Church	£10	—	Rev. H. H. Surgey, Dudley Road, Grantham.
" 31	Grantham—Church	£10.	—	H. H. Surgey, Dudley Road, Grantham.
" 31	Liverpool—Church	—	—	Hon. Secretary, 7 Chevin Road, Liverpool.
June 30	Peterborough—Library	£50, £25, £15.	£1	W. Mellows, Town Clerk, Peterborough.
July 2	Bury St Edmunds—Alterations to Shire Hall	£50 £30, £20.	£1	A. A. Hunt, County Architect, Sudbury, Suffolk.

Tenders.

Information from accredited sources should be sent to "The Editor" at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Addressed postcards on which lists of tenders may be stated will be sent post free on application to the Manager, BUILDERS' JOURNAL, 6, Great New Street, Fetter Lane, E.C.

Audlem.—For the erection of a town hall and caretaker's house, for Audlem Public Hall Co. Mr. R. Matthews, architect, Parr's Bank Chambers, Nantwich. Quantities by architect:—

Heywood	£1,890 0 0
Edge	1,877 0 0
Kendall	1,811 0 0
Neild & Son	1,730 0 0
Cox & Vaughan	1,676 0 0
Healey	1,630 0 0
Harding	1,630 0 0
Gresty & Son	1,585 0 0
Manley & Son	1,545 0 0
Stretton & Gibson,* Audlem	1,523 6 4

* Accepted provisionally.

Desborough (Northants).—For the construction of about 800yds. of railroad to join the Midland Railway at Desborough, for the Desborough Co-operative Society. Mr. D. J. Diver, engineer, Desborough:—

Dixon, St. Albans	£5,182
Drabble, Matlock Bridge	4,662
Eastwood, Market Harborough	4,660
Johnson & Son, Leicester	4,480
Orton, Coalville	4,319
F. Barlow, Rothwell	4,095
Coker, Rochester	4,008
Harris, Leeds	3,950
Smith & Bunning, Kettering	3,889
Johnson & Langley, Leicester	3,800
C. Chamberlain, Leicester	3,790
Dixon, Bradford	3,536

T. Panter, Desborough	2,995
Siddons & Freeman, Oundle	2,875
W. Brown, Market Harborough	2,855
E. Heycock,* Great Glen	2,648

* Accepted.

Frinton-on-Sea.—For making-up and sewerage Upper Station Road, for the U.D.C. Quantities by Mr. E. M. Bate, surveyor to the Council:—

Wilson, Border & Co., Romford	£2,424 11 11
G. G. Rayner, West Croydon	2,353 18 7
Thomas Adams, Wood Green	2,319 19 11
E. T. Bloomfield, South Tottenham	2,186 19 2
C. E. Mackenzie, Clacton-on-Sea	2,175 3 1
J. C. Trusman, Swanley	2,161 5 7
George Rackham, Norwich	2,130 14 2
C. W. Killingback & Co.,* James Street, Camden Town, N.	1,979 3 0

* Accepted.

Frinton-on-Sea.—Accepted for the following works, for the U.D.C. Mr. E. M. Bate, surveyor to the Council:—

For making-up Cambridge Road.	
C. W. Killingback & Co., James Street, Camden Town, N.	£670 0 7
For sewerage and making-up "right of way" by Harold Road.	
J. C. Trusman, Swanley, Kent.	£542
For sewerage Raglan Road.	
Wilson, Border & Co., Romford	£172 3 4
For sewerage Oxford Road.	
Wilson, Border & Co., Romford	£118 9 5
For sewerage and making-up "right of way" by Public Hall.	
C. W. Killingback & Co., James Street, Camden Town, N.	£124 1 2

Hereford.—For the erection of a residence at Adam's Hill, Breinton Road, Hereford, for Mr. E. F. Bulmer. Messrs. Groom & Bettington, architects, Palace Chambers, Hereford. Quantities by architects:—

C. Cooke	£2,778 5 0
Beavan & Hodges	2,770 0 0
W. P. Lewis & Co.	2,769 10 0

A. J. Colborne, Swindon	£2,678 12 0
W. Bowers & Co.	2,481 2 0
W. Powell*	2,391 0 0

Note.—Tenders are exclusive of sanitary fittings glazing, casements and heating.

* Accepted. [Rest of Hereford.]

Hitchin.—For alterations and additions to "Pegsdon House," Hitchin, for Mr. F. H. Bromwich. Messrs. C. E. Mallows & Grocock, architects, London and Bedford:—

A. Bavister & Son, Luton	£1,856
J. P. White, Bedford	1,760
Strange & Son, Tunbridge Wells	1,619
Page & Sons, Buckden	1,520
Harrison, Bedford	1,477
Warton & Dunstall, Bedford	1,427
Willmot & Sons,* Hitchin	1,356

* Accepted.

Leigh (Lancs).—For the erection of Leigh infirmary. Mr. J. C. Prestwich, architect, Bradshawgate Buildings, Leigh:—

Bywater & Sons, Pemberton	£21,500
White & Sons, Liverpool	20,547
Hatch & Sons, Lancaster	19,985
T. & W. Meadows, Stockport	19,545
H. Fairclough, Warrington	19,500
H. & F. Lomax, Platt Bridge	19,500
S. & J. Hodgkiss, Farnworth	19,441
E. & D. Maginnis, Bolton	19,231
S. Warburton, Manchester	19,169
Gerrard & Sons, Ltd., Swinton	18,792
J. W. Cowburn, Leigh	18,780
C. W. Davenport, Warrington	18,774
Atherton & Co., Ltd., Bolton	18,463
W. Townson & Sons, Ltd., Bolton	18,320
J. H. Wilson, Tyldesley	18,263
R. Neill & Sons, Ltd., Manchester	18,250
J. Tinlin, Bury	18,000
W. Cunliffe, Bolton	17,918
J. C. & F. Woods, Atherton and Bolton	17,891
J. Cocker,* Walkden	17,649

* Accepted.

(Continued on p. xviii.)

THE "CALEDONIA" FANLIGHT OPENER SPECIAL.

PARTICULARS FROM **ROBERT ADAMS, Patentee,**
65 & 67, NEWINGTON CAUSEWAY, LONDON, S.E.
AND PERFECTION IN DOOR SPRINGS.

Advertising Notes.

Because a certain kind of food did not agree with you and build up your strength, will you therefore forego all food? Because a certain advertisement did not agree with the public and build up your business, will you forego all advertising? Think it over.

Appointments Wanted.

The charge for Advertisements under this heading is 1s. 6d. per insertion not exceeding four lines, and 6d. per line afterward, prepaid. Three insertions may be had for the price of two. Advertisements must reach the Office not later than 5 o'clock on Friday (20th).

A YOUTH, fond of drawing and passed London Matric. in arithmetic, algebra, and geometry, seeks CLERKSHIP in Architect. Surveyor's, or Builder's office.—A. G., "Wilton," Hamilton Road, Sidcup. 383

AN ARCHITECT is prepared to get out practical Artistic Designs and Working Drawings and details for moderate inclusive fee. Approval in pencil.—DAWES, 24, Charles Road, St. Leonards. 398

AN ARCHITECT with spare time is willing to render assistance in his own office in the preparation of perspectives, designs, working drawings, quantities, &c.—CHAS. CARTER, M.S.A., Sherwood Lodge, Nottingham. 386

AN IMPROVER in the Building Trade seeks situation as time-keeper, or to assist in joiner's shop. Early riser. Good references.—Address G. P., Wingland Grange, King's Lynn. 382

ARCHITECT and SURVEYOR'S ASSISTANT desires RE-ENGAGEMENT. Isolation hospital work, working drawings, details, quantities, surveys, &c. Good testimonials. Moderate salary.—Box 351, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

ARCHITECT and SURVEYOR'S ASSISTANT desires RE-ENGAGEMENT. Seven years' experience. Excellent references. Good knowledge of quantities and specifications. Salary £2.—H. P. S., 76, Tremadoc Road, Clapham, S.W. 391

ARCHITECT and SURVEYOR'S EXPERIENCED ASSISTANT, age 25, over nine years in good offices, desires ENGAGEMENT. Thorough good all-round man. Excellent testimonials.—UNO., The Close, Grassmoor, Chesterfield. 377

ARCHITECT & SURVEYOR'S JUNIOR, 7 years' experience; can take levels, surveys, take off quantities, working drawings, and details.—Box 388, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

ARCHITECT'S IMPROVER or JUNIOR ASSISTANT (19), Prob. R.I.B.A., neat, accurate draughtsman, London experience, excellent references.—Box 350, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

ARCHITECT OR C.E.'s GENERAL ASSISTANT desires London re-engagement. 15 years in and out-door experience. Working drawings, details, specifications, steel construction. Excellent references.—Box 380, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

ARCHITECT, SURVEYOR & ESTATE AGENT'S ASSISTANT, M.S.A., age 26. Experience 10 years, working and detail drawings, specifications, quantities, surveying and levelling; wants position in large country Estate Office; or chief assistant with view to permanency. Reference first class, salary 50/- per week.—ALEXANDER DRAKE ALLEN, Moss Vicarage, Doncaster. 392

ASSISTANT (Architect's and Surveyor's) DISENGAGED. Working and detail drawings, specifications, quantities, surveying, and levelling. Excellent references.—Apply HOLLINGWORTH, Dry Sandford, Abingdon. 345

ASSISTANT BUILDING SURVEYOR and ARCHITECT, passed P.A.S.I., DESIRES CHANGE; eight years' good experience; excellent draughtsman; accurate surveyor and leveller; specifications, quantities, &c.; excellent testimonials; municipal preferred.—Box 396, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

BRICKLAYER (27), Energetic, Abstainer, seeks job, town or country. No reasonable offer refused.—A. G., 22, Uamvar Street, Poplar, E. 363

BRICKWORK, Pointing and Gauge Work wanted by experienced man. Contract or Speculation. Good reference.—X. Y. Z., 133, Derby Road, Seven Kings, Ilford. 370

BUILDER'S ASSISTANT. Ten years' experience. Abstracting and billing up quantities. Contract and jobbing, prime costs, accounts, checking invoices, ledgers, and all other office routine, also several years of outside supervision. Excellent references. Age 27.—FRANCIS, 2, Kennington Park Road. 366

BUILDER'S JUNIOR CLERK or ASSISTANT. Position wanted as above by young gentleman. Preferable outside jobbing supervision, measuring, &c. Accustomed to usual office routine, tracing, &c. Age 21. Experience chief object.—Box 390, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

CARPENTER and JOINER, age 22, eight years' experience, desires CONSTANCY, country preferred.—H. G. C., 20, Woodhouse Grove, East Ham. 401

CARPENTER AND JOINER (Good), Factory, Estate, or otherwise.—W. W., 19, Brunswick Avenue, New Southgate, N. 364

CLERK OF WORKS desires an appointment. Age 36. Total abstainer. Able to prepare details, plans, specifications, quantities, surveys, levels, highest references.—Apply Box 395, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

DRAUGHTSMAN, &c. (22), disengaged, 6 years' experience working drawings, details, ornamental lettering &c., typewriting, good refs.—C. S. H., 176, Beaver Road, South Ashford, Kent. 385

ESTATE CLERK OF WORKS wants engagement, long experience on country estates. Plans, measurements, accounts, good references.—E., Box 376, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

ESTIMATOR (successful) desires Engagement. Quantities, measuring up, adjusting accounts, plans, specifications, valuations, or would undertake temporary work for Builders. Highest references.—MARTIN, 262, Amburst Road, Stoke Newington. 379

GENERAL FOREMAN seeks RE-ENGAGEMENT. Good manager of men. Bricklayer by trade. Good references from last and previous employers.—Address A. G., 58, Strone Road, Forest Gate, E. 349

GENERAL FOREMAN SEEKS RE-ENGAGEMENT; used to jobs at competitive prices; just finished large contract.—Box 361, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

GENERAL FOREMAN, 40, seeks RE-ENGAGEMENT, 2½ years with last employer. Trade, bricklayer; good knowledge of all branches.—Address 46, Colchester Road, Walthamstow, Essex. 371

GENERAL FOREMAN (41) seeks Re-engagement. Trade, carpenter. Town or country, latter preferred. Good references for both town and country work.—J. T. S., 6, Portobello Road, Notting Hill. 368

GENERAL FOREMAN wants re-engagement, new or alteration, good Draughtsman and Manager of men, by trade Carpenter and Joiner, age 40.—Box 397, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

GILDER, Practical Worker and Estimator seeks RE-ENGAGEMENT as FOREMAN; 16 years' reference.—J. L., 291, New North Road, Islington, N. 399

JOINER (good), wants JOB, 8 years' experience, age 23, suit small Builder, well up in stairs and fixing.—V. R., 2, Eve Rd., South Tottenham. 367

PLUMBER, GAS and HOT WATER FITTER, wants JOB. New work or jobbing, day or piece; 11 years' experience. Distance no object.—T. C., 89, Roman Road, Barnsbury, N. 358

QUANTITY SURVEYOR'S ASSISTANT, 3½ years' experience, abstracting and billing, salary 25s.—T. A. S., 36, Bkersteth Road, Tooting Junction, S.W. 402

QUANTITY SURVEYOR, fully qualified, open to prepare Estimates and adjust Variation Accounts at own office. Full responsibility. Good references. Low charges.—Box 400, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

QUANTITY SURVEYOR, North of England, prepares specifications, adjusts accounts, or other assistance. Terms moderate. Experienced.—J. BULMER, 54, Wansbeck Gardens, West Hartlepool. 393

SHOP FOREMAN of JOINERS. Large experience of all kinds of joinery under leading architects. Good manager of men and machinery. Accurate setter-out. Good references.—L., 3, Stanley Terrace, Layton Road, Brentford. 378

STAINED GLASS, Mosaics, Leaded Lights, Decoration and Figure and Ornamental Designer, and Cartoonist.—E. S. W., 43, Ranelagh Road, Baling, London, W. 369

TO ARCHITECTS.—Quantities taken out accurately. Midland and Northern practice. Small percentage.—SURVEYOR, Box 362, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

TO W.D. or ADMIRALTY CONTRACTORS.—GENERAL FOREMAN requires SITUATION. Well-up in schedule. Four years in charge of specials, measure and abstract. Abstainer; age 27.—H. C., 9, Page's Lane, Muswell Hill, Hornsey, N. 357

WANTED, job as Builder's Junior Clerk. Joiner by trade; can take off quantities, and measure up work; refs.—J. C., P. O. Pannal, N.E.R., Yorks. 384

WORKING FOREMAN of CARPENTERS seeks ENGAGEMENT. Well up in all branches. Used to pushing jobs. Town or country. Age 45. Good references.—A. M. F., 38a, Edenvale Street, Fulham, S.W. 365

YOUNG MAN, age 23, 7 years' experience roadmaking, surveys, buildings, certificate building construction and quantities. First-class references.—HORACE HARVEY, Hannington House, Broadstairs. 375

Appointments Vacant.

BUILDER'S ASSISTANT WANTED for Camden Town office. Must have several years' experience, able to keep prime cost, book up materials and plant, write up contract and jobbing accounts and general routine. State age, salary, experience, and where last employed.—Box 389, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

BUILDER'S CLERK.—Must have experience of general routine of builder's office, be capable of taking off quantities, measuring up work, etc. Particulars of experience, age, and salary required to J. ROTHWELL & SONS, Builders and Contractors, St. Helens, Lancs.

CLERK WANTED for Contractor's office. Must be well up in builders' book-keeping and accounts; send reference from last employer, also state age and salary required.—Apply WALL & HOOK, Builders and Contractors, Brimscombe, Gloucestershire.

CONTRACTOR'S OFFICE.—WANTED SURVEYOR and DRAUGHTSMAN, experienced in preparation, plain building plans, specifications and quantities, contract accounts. State age, experience, salary, references.—Address, own handwriting, Box 403, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

IMPROVER WANTED in Architect's Office for few months; good opening for educated youth.—Box 356, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

Miscellaneous.

LIFTS.—WM. AUG'S GIBSON, LTD., formerly President of American Elevator Co., later Managing Director Otis Elevator Co., Ltd. Temple Bar House, 28, Fleet Street, London, E.C.

LINKER FOR SALE, washed and graded for Bacteria Beds; any quantity; about 1s. 8d. per cubic yard. Large stocks on hand. Also slag and concrete goods.—Apply WAKE & HOLLIS, LTD., Collingwood Buildings, Newcastle-on-Tyne.

ESTABLISHED 1884.—H. LEWIS & Co., Practical Plumbers and Hot Water Engineers, Contractors to the Trade. References from Architects and Surveyors for work done.—2, Great Quebec Street, W. 381

MARBLE, GRANITE, STONEMARK. Supplied to Architects and Builders. Send for Builders' Price List and Quotations. Telephone 1159, Hampstead.—KELLY & Co., Kilburn, Mill Hill, N.W., etc.

THE FOLLOWING BOOKS (new), carriage paid.—"Gwilt's Encyclopædia," 12/6; "Practical Rules for Drawing," G. G. Pyne, 3/- (pub. 7/6); "Some Hints on Learning to Draw," 3/6 (pub. 8/-); "Modern Architecture" (35 plates), 10/-.—Box 387, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

430 CEMENT BAGS FOR SALE in excellent condition. 3d. each, or £5 to clear the lot. Sample posted for six stamps.—ARTHUR MAY Heybridge, Essex.

WIRE NAILS, Mixed, 8s. per cwt.; 28 lbs., 2s. 3d.; Screws mixed, 28s. per cwt.; 28 lbs., 7s. 6d.; wire, cut, wrought and malleable nails, tacks, shoe nails, rivets, &c., wholesale prices.—MIDLAND NAIL WORKS, 25 and 26, Rea Street, Birmingham. (John Pyne, Proprietor.)

WORKING or COMPETITION DRAWINGS, PERSPECTIVES, TRACINGS, PHOTO-COPIES (OR), MODELS OF BUILDINGS, LITHO-PRINTING.

THE LONDON DRAWING & TRACING OFFICE, (Estd. 1883.) 98, Gray's Inn Road, W.C. (Adjoining Holborn Town Hall.)
Telephone, No. 1011 HOLBORN. Manager—JOHN B. THORP. Telegrams: "DIVIDITORE," LONDON.

SPECIAL NOTICE.

Owing to the Whitsun Holidays Small Advertisements and all other matter intended for publication in our next issue—May 25th—must reach this office not later than 5 o'clock p.m. on Friday, May 20th.

Educational.

The Charge for Advertisements under this heading is 2s. per insertion not exceeding four lines, and 6d. per line afterward, prepaid. Advertisements must reach the Office not later than 5 o'clock p.m. on Friday (20th).

ALL TECHNICAL EXAMINATIONS.—First place in every open competition during last two years. Correspondence or Resident Tuition. Vacancy for Articled Pupil.—G. A. T. MIDDLETON, 19, Craven Street, W.C.

QUANTITIES.—A course of Correspondence Lectures on the preparation of Quantities on the most approved London System COMMENCED SEPTEMBER 28th. For particulars apply Box 2546, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

R.I.B.A. EXAMS.—Personal and Correspondence tuition; courses of any duration. Apply for syllabus to Mr. A. G. BOND, B.A. Oxon., A.R.I.B.A., 115, Gower Street, London, W.C. (late Howgate and Bond).

STRUCTURAL STEELWORK

Correspondence Classes specially for Architects, Assistants, Surveyors, Builders, and Draughtsmen, are held by the Midland Engineering Bureau, Strand, Derby. Specialists in American and Continental Construction. Thorough Tuition. Send for descriptive booklet J. (1904), and read opinions of past students.

THE SOCIETY OF ARCHITECTS.

FOUNDED 1884.

INCORPORATED 1893.

Telegrams: "Crypt," London. Telephone: 1852, Holborn.

STAPLE INN BUILDINGS, HOLBORN, W.C.

The next qualifying Examination for membership will be held in OCTOBER, 1904.

C. MCARTHUR BUTLER, Secretary.

650,000 MORE MEN WANTED.

650,000 students have enrolled with us in 12 years, and over 14,000 are enrolling each month. We give instruction in 152 distinct courses: Architecture and Architectural Drawing, Building and Contracting, Electrical, Mechanical, Steam, Civil, Sanitary, and Mining Engineering, &c. Ours are the largest technical schools in the world, and we are the originators of instruction by correspondence. You have no books to buy. Only spare time study required to greatly increase your earning capacity. Moderate terms. Easy monthly payments. We have helped thousands to succeed. Write TO-DAY, stating what course interests you, to—BRITISH AGENCY, INTERNATIONAL CORRESPONDENCE SCHOOLS, 57 & 58, Chancery Lane, London, W.C.

Drawings, Tracings &c.

CITY OF LONDON AND FINSBURY DRAWING AND TRACING OFFICES.

Experienced assistance of every kind promptly given. Architectural Designs, Perspectives, Competitions. Specifications, Quantities, Photoprints, Lithography. No. 113, Finsbury Pavement (Moorgate), London, E.C. Telegraph, "PITCHPINE, LONDON." Phone, 1099 Central.

Contracts Open.

COUNTY COUNCIL OF MIDDLESEX. HAPSBUARY ASYLUM, NEAR ST. ALBANS, HERTS.

TO BUILDERS AND CONTRACTORS.

The Visiting Committee of the above Asylum invite TENDERS for ALTERATIONS to the existing Farm Buildings, and the CONSTRUCTION of additional Farm Buildings, consisting of Cow Loose Boxes, Cow Houses, Dairy, Slaughter-house, Sick Loose Box, Poultry House, Cottages, Piggeries, Stable, &c.

Bills of Quantities are being prepared by Messrs. YOUNG & BROWN, 104, High Holborn, London, W.C.

Contractors willing to tender for the work must send in their names to the Clerk of the Committee, together with a statement of the work which they have executed, and a deposit of £5 5s., on or before the 19th MAY, 1904. The Bills of Quantities will then be forwarded in due course.

The Tenders must be delivered to the Clerk not later than Noon, on the 6th JUNE, 1904, and must be marked "Tender for Farm Buildings, &c., Hapsbury." The amount of the deposit will be returned to persons who have sent in bona fide tenders.

The Committee do not bind themselves to accept the lowest or any tender.

WALTER GEO. AUSTIN,

Clerk of the Visiting Committee.

Guildhall, Westminster, S.W.,
10th May, 1904.

COUNTY BOROUGH OF BURY.

HEATING OF TRAMWAY DEPÔT.

The Tramways Committee are prepared to receive Schemes and TENDERS for the HEATING required at the CAR DEPÔT, Rochdale Road, Bury. Particulars may be obtained on application to Mr. ARTHUR W. BRADLEY, Assoc. M.Inst.C.E., Borough Engineer and Surveyor, Bury, on payment of a deposit of £1, which will be returned on receipt of a bona fide tender.

Sealed tenders, endorsed "Tender for Heating, Car Depot," must be delivered at my office not later than the 7th day of JUNE, 1904.

Municipal Offices, Bury,
7th May, 1904.

JOHN HASLAM,

Town Clerk,

RUGBY URBAN DISTRICT COUNCIL.

TO CONTRACTORS.

The above Council invite TENDERS for the Construction of an Egg-shaped OUTFALL SEWER, about 1232 yards in length, together with the Manholes, Connections, and other Works connected therewith.

The Plans, Specifications, and Conditions of Contract can be seen at the office of the undersigned, where also copies of the Bill of Quantities and Form of Tender can be obtained by intending Contractors on payment of Two Guineas, which will be returned on the receipt of a bona fide Tender.

Tenders on the form prescribed and endorsed "Outfall Sewer," must be sent to T. M. WRATISLAW, Esq., Clerk to the Council, High Street, Rugby, on or before the 21st day of MAY next.

The Council do not bind themselves to accept the lowest or any Tender. By order,
D. G. MACDONALD, Assoc. M.Inst.C.E.,
Surveyor to the Council.

Rugby, April, 1904.

BIGGLESWADE JOINT HOSPITAL BOARD.

TO BUILDERS.

The above Board are prepared to receive TENDERS for CARRYING OUT the ENLARGEMENT of the ISOLATION HOSPITAL at Biggleswade and invite persons desirous of TENDERING to forward their names, not later than 7th MAY, 1904, to Mr. HENRY YOUNG, of Bedford, the Architect to the Board.

Plans and Specifications can be seen and further particulars obtained at his office, Maitland Street, Midland Road, Bedford.

Bills of Quantities will be supplied to such persons on payment of £2 2s., returnable on receipt of a bona fide Tender.

Sealed Tenders, endorsed "Tenders for Hospital," are to be addressed to the Clerk of the Joint Hospital Board at Biggleswade, and delivered on or before NOON of TUESDAY, the 31st day of MAY, 1904.

The Board do not bind themselves to accept the lowest or any Tender, or to defray any expenses in connexion with tendering. By order,
Biggleswade, HENRY CHAUNDLER,
25th April, 1904. Clerk.

Property & Land Sales.

The charge for Advertisements under this heading is 2s. per insertion not exceeding four lines, and 6d. per line after.

BERKS and SURREY (borders).

Under 1½ mile of Sunningdale Station, L. and S. W. Ry. FREEHOLD RESIDENTIAL PROPERTY.

HAMPTON AND SONS are favoured with instructions from the Trustees of the late J. GILHAM, Esq., to SELL by AUCTION, at the Mart, E.C., on FRIDAY, JUNE 10, at 2 o'clock precisely (unless previously disposed of by private treaty), the very choice Freehold Property, known as

HATTON HALL, Windlesham, occupying a charming position with rural surroundings and in the centre of a first-rate residential and sporting district.

Within easy drives of Ascot Racecourse and Windsor Park.

The admirably planned residence was substantially built about 30 years ago for owner's occupation. Stands high on dry soil. Near favourite golf course. Approached from lodge entrance.

Stabling, gardener's house, laundry, small house and garden, productive walled kitchen garden, well wooded pleasure grounds, orchard, and park-like and well-watered meadow land, in all about

42 ACRES.

Extensive road frontages and charming Building sites Particulars and Conditions of Sale of Messrs. LINDSAY GREENFIELD, and MASONS, Solicitors, 11, Ironmonger Lane, E.C., and 6, Albion Road, Sutton, Surrey; of R. P. WILLIAMS, Esq., Solicitor, 51, Dock Street, Newport, Mon.; and of HAMPTON AND SONS, Auctioneers, Nos. 2 and 3, Cockspur Street, S.W.

STAMFORD HILL.—Valuable Freehold Building Estate, with nearly 700 feet frontage to the main road, pleasantly situate on high ground, near Clapton Common, close to tramway, near the Stamford Hill and South Tottenham Stations, and within 4½ miles of the Bank of England, ripe for immediate building operations and the creation of ground rents. The estate comprises an area of 9a. 2r. 25p. situate without the London County Council area, and includes, in addition to the fine old residence, known as "The Newsums" (in hand), with gate-keeper's lodge and stabling, four houses let on short tenancies at rents amounting in all to about £200 per annum. Vacant possession of the greater portion of the property can be given on completion of the purchase, thus enabling a purchaser at once to proceed with the development of the estate.

MESSRS. BEADEL, WOOD & Co. are instructed to SELL by AUCTION, at the Mart, Tokenhouse Yard, London, E.C., on Thursday, 16th June, 1904, at 1 o'clock precisely, the above valuable FREEHOLD BUILDING ESTATE, unless previously disposed of by private treaty. Particulars, with Plans and Conditions of Sale, may be obtained of Messrs. Broughton, Nocton, and Broughton, Solicitors, 12, Great Marlborough Street, W., at the Mart; and of Messrs. Beadel, Wood & Co., 97, Gresham Street, London, E.C.

EMPLOYMENT REGISTER.

Too late for Classification.

- 391.—ARCHITECT AND SURVEYOR'S ASSISTANT. 7 yrs. ex. quantities and specifications; sal. £2; ex. refs.
- 392.—ARCHITECT, SURVEYOR, AND ESTATE AGENT'S ASSISTANT. M.S.A. Age 26. 10 yrs. exp. working and detail drawings, surveying, levelling, &c. sal. 50s., ex. refs.
- 393.—QUANTITY SURVEYOR, experienced, prepares specifications and adjusts a/cs., terms mod.
- 395.—CLERK OF WORKS, age 36, abstainer; details, plans, specifications, quantities, surveys, levels, ex. refs.
- 396.—ASSISTANT BUILDING SURVEYOR, age 24, P.A.S.I. 8 yrs. exp., good draughtsman, surveys, levelling, specs., quantities, &c.
- 397.—GENERAL FOREMAN, age 40, good draughtsman and manager, trade carpenter and joiner.
- 398.—ARCHITECT prepares designs, wkg. drawings, details; terms mod.
- 399.—GILDER. Foreman, practical worker and estimator, 16 yrs. exp. and refs.
- 400.—QUANTITY SURVEYOR prepares estimates and adjusts a/cs. at own office; good refs., low charges.
- 401.—CARPENTER AND JOINER, age 22, wants constancy, country preferred, 8 yrs. ex.
- 402.—QUANTITY SURVEYOR'S ASSISTANT. Abstracting, billing, &c. Sal. 25s., 3½ yrs. exp.

See p. xxii for the Employment Register.

The LATEST TIME for RECEIVING "WANT" ADVERTISEMENTS for our NEXT ISSUE is 5 o'clock p.m. on FRIDAY (20th).
OFFICE: 6, GREAT NEW STREET, FETTER LANE, E.C.

TENDERS—cont. from p. xv.

Kidderminster. —For additional water-supply works, for the Corporation. Messrs. Willcox & Raikes, engineers, 63, Temple Row, Birmingham:—		
Biggs, Wall & Co., London ..	£4,500	16 5
C. Jordan & Co., Newport, Mon. ..	3,885	0 0
H. Roberts, Colwyn Bay ..	3,713	0 0
R. W. Fitzmaurice & Co., Birmingham ..	3,706	19 0
C. Chamberlain, Leicester ..	3,544	0 0
J. W. Dean, Ltd., London ..	3,525	0 0
Davies, Ball & Co., Bromley ..	3,515	0 0
T. Vale & Son, Stourport ..	3,450	0 0
G. Law,* Kidderminster ..	3,123	13 0

* Accepted.

Lichfield.—For enlargement of Lichfield Post Office, for H.M. Office of Works, &c.:—

T. Mason ..	£4,500	£0
T. Walmesley ..	4,236	28
G. Webb ..	3,871	36
G. H. Marshall ..	3,696	17
D. Roberts ..	3,670	10

A. Credit for old materials.

Llandaff.—For the erection of a chemical and physical laboratory, studio, &c., to school buildings, for the Governors of Howell's Glamorgan County School for Girls. Mr. G. E. Halliday, architect, 14, High Street, Cardiff. Quantities by Mr. J. W. Rodger, Cardiff:—

Beames & Nephew ..	£3,250	0 0
Lattay & Co. ..	3,227	0 0
Knox & Wells ..	3,177	0 0
D. Davies ..	3,140	0 0
C. W. Cadwallader ..	3,100	0 0
F. Bond ..	2,992	0 0
G. Hallett ..	2,910	0 0
W. Cox ..	2,788	6 6
F. C. Williams ..	2,670	0 0
Blacker Brothers ..	2,523	0 0
C. C. Dunn,* Cardiff ..	2,500	0 0

* Accepted.

Llandaff.—For rebuilding the "Cow and Snuffers' Inn." Llandaff, for the Rhondda Valley Brewery Co., Ltd. Mr. Arthur O. Evans, architect, Pontypridd:—

Lattay & Co. ..	£2,369	2 7
F. Bond ..	2,281	0 0
W. Thomas & Co. ..	2,244	3 3
F. Ashlar ..	2,243	2 4
S. Shall ..	2,193	0 0
F. Thomas ..	2,175	0 0
C. Beames & Nephew ..	2,175	0 0
D. Davies ..	2,145	0 0
G. Griffiths & Son ..	2,095	1 0
W. Morgan ..	2,025	0 0
G. Hallett ..	2,020	0 0
E. R. Evans & Brothers ..	1,995	0 0
Blacker Brothers ..	1,919	7 0
Knox & Wells* ..	1,807	0 0

* Accepted.

[All of Cardiff]

London.—For new sanitary and drainage works at Creden Road School, Kottenhithe New Road, for the London School Board:

J. Carmichael ..	£1,640	0 0
H. Leney & Son ..	1,634	0 0
W. J. Mitchell & Son ..	1,593	0 0
J. & C. Bowyer ..	1,587	0 0
Lathey Brothers ..	1,547	0 0
W. Downs ..	1,512	0 0
G. Parker ..	1,490	0 0
F. Bull ..	1,479	0 0
J. W. Falkner & Sons ..	1,456	0 0
R. P. Beattie ..	1,431	14 9
Davis & Bennett ..	1,430	0 0
A. Porter* ..	1,393	0 0

* Recommended for acceptance.

London.—For the erection of superstructure of the Northern District Post-Office, for H.M. Office of Works, &c.:—

Stancliffe stone.

J. Mowlem & Co., Ltd. ..	£33,816
F. & H. F. Higgs ..	32,750
W. H. Lorden & Son ..	31,850
C. Ansell ..	30,340
Leslie & Co., Ltd. ..	30,204
J. Smith & Sons, Ltd. ..	30,100
Patman & Fotheringham ..	29,863
Perry Brothers ..	29,750
B. E. Nightingale ..	28,759
Galbraith Brothers ..	28,600
H. J. Williams ..	28,153

Portland stone.

J. Mowlem & Co., Ltd. ..	£33,226
F. & H. F. Higgs ..	31,950
W. H. Lorden & Son ..	31,000
J. Smith & Sons, Ltd. ..	30,100
Perry Brothers ..	30,000
Leslie & Co., Ltd. ..	29,938
C. Ansell ..	29,940
Patman & Fotheringham ..	29,923
B. E. Nightingale ..	28,859
Galbraith Brothers ..	28,450
H. J. Williams ..	27,903

London.—For the erection of a school for sixty mentally defective children at Rosendale Road, West Dulwich, for the London School Board:—

J. Marsland & Sons ..	£4,167
W. Akers & Co. ..	3,845
Enness Brothers ..	3,741
Martin, Wells & Co., Ltd. ..	3,721
F. G. Minter ..	3,678
J. Smith & Sons, Ltd. ..	3,629
E. P. Bulled & Co. ..	3,610
W. Smith & Son ..	3,610
F. & H. F. Higgs ..	3,581
Rice & Son ..	3,533
W. J. Mitchell & Son ..	3,525
J. Garrett & Son ..	3,499

T. D. Leng ..	£3,469
Holliday & Greenwood, Ltd. ..	3,423
E. Triggs ..	3,356
Edwards & Medway ..	3,300
J. & C. Bowyer* ..	3,297

* Recommended for acceptance.

London.—For the erection of a school for sixty mentally defective children at Ambler Road, Finsbury Park, for the London School Board:—

C. Dearing & Son ..	£3,632
G. S. S. Williams & Son ..	3,486
J. Grover & Son ..	3,450
A. Porter ..	3,423
L. H. & R. Roberts ..	3,388
McCormick & Sons ..	3,285
Marchant & Hirst ..	3,282
W. M. Dabbs & Son ..	3,252
G. Neal ..	3,225
E. Lawrance & Sons ..	3,213
Stevens Brothers ..	3,178
Treasure & Son ..	3,103
J. Willmot & Sons* ..	3,095

* Recommended for acceptance.

Loughborough.—For the erection of buildings for their electricity supply station in Bridge Street, Loughborough, for the Corporation. Mr. Albert E. King, architect, Baxtergate, Loughborough:—

Wellerman Brothers, Hyde ..	£6,132	13 3
F. M. Thompson & Son, Nottingham ..	5,440	0 0
J. Hutchinson & Son, Nottingham ..	5,340	0 0
Perry & Co., London ..	5,325	0 0
Orson, Wright & Co., Wigston, near Leicester ..	5,250	0 0
McCarthy & Co., Coventry ..	5,053	0 0
J. E. Johnson & Son, Leicester ..	4,920	0 0
Radford & Greaves, Derby ..	4,903	0 0
F. Messon, Nottingham ..	4,795	0 0
Pegg & Bailey, Derby ..	4,734	15 8
J. G. Short, Nottingham ..	4,698	0 0
Haycock & Sons, Great Glen, near Leicester ..	4,630	0 0
Ford & Co., Derby ..	4,573	0 0
W. Moss & Sons, Loughborough ..	4,399	0 0
A. Faulks,* Sparrow Hill, Loughborough ..	4,365	0 0

* Accepted.

Liverpool.—For alterations and additions to Blundell-sands Hotel, for Messrs. Threlfall's Brewery Co., Ltd. Mr. Frederick G. Fraser, architect, 19, Oldhall Street, Liverpool. Quantities by the architect:—

Isaac Dilworth ..	£4,300	0 0
Joseph Pyett ..	4,019	7 0
Richard Costain & Sons ..	3,900	0 0
Brown & Backhouse ..	3,780	0 0
Samuel Fowler ..	3,643	0 0
James Taylor ..	3,640	0 0
George Johnson ..	3,589	0 0
Broadbridge & Reid ..	3,517	0 0
George E. Johnson* ..	3,483	0 0

* Accepted.

Otley (Yorks).—For the construction of gin, 12in., 15in. and 18in. earthenware pipe sewers, storm overflow, and surface-water drains and 12in. cast-iron pipe syphon in duplicate across the River Wharfe, together with the necessary manholes, lampholes, ventilating shafts, forcing and air chambers, and other works, for the U.D.C. Mr. J. E. Sharpe, engineer and surveyor:—

J. Hannam, Otley ..	£3,373	3 1
A. & C. Harris, Morley ..	3,317	8 7
B. Oxley, Harrogate ..	3,304	15 5
Ward & Tetley, Bradford ..	3,237	5 1
W. Brigg, Bradford ..	2,879	3 7
Barker Brothers, Bradford ..	2,839	1 1
W. Morley & Sons, Keighley ..	2,824	0 10
E. Kellett, Bradford ..	2,797	14 5
H. E. Buckley,* Bingley ..	2,637	7 2

* Accepted.

[Estimate, £2,733 7s. 2d.]

Taibach (Wales).—For erection of shop and premises, Taibach, Port Talbot, for Mr. W. R. Hanford. Mr. Frank B. Smith, architect and surveyor, Port Talbot:—

J. Nicholas ..	£1,390	0 0
Price Brothers ..	1,275	0 0
J. Lake ..	1,239	10 7
J. Davis ..	1,210	0 0
S. Rees ..	1,182	13 3
M. Cox,* Port Talbot ..	1,143	0 0

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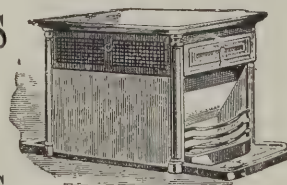
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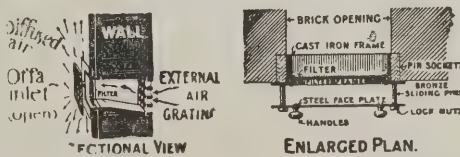
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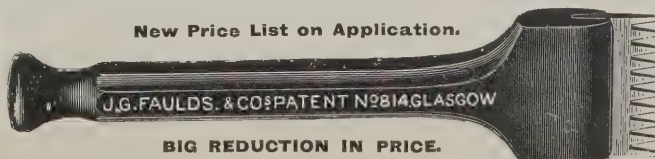
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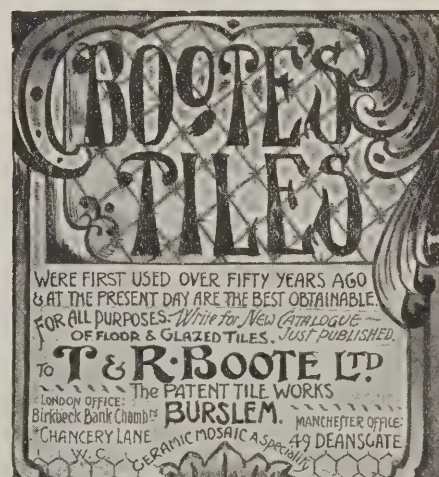
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Straw	do.	1 12 0

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Castor Oil, French ..	per cwt.	1 0 5
Colza Oil, English ..	do.	1 1 3
Copperas	per ton	2 0 0
Lard Oil	per cwt.	2 15 0
Lead, white, ground, car-	do.	1 4 10
bonate	do.	1 0 4
Do. red	do.	0 14 7
Linseed Oil, barrels ..	per gal.	0 0 6
Petroleum, American ..	do.	0 0 5
Do. Russian	do.	0 0 8
Pitch	per barrel	10 13 0
Shellac, orange ..	per ton	3 2 6
Soda, crystals ..	per cwt.	1 2 6
Tallow, Town ..	per barrel	1 1 6
Tar, Stockholm ..	per cwt.	2 2 3
Turpentine	do.	2 2 3

	£ s. d.	£ s. d.
METALS.		
Copper, sheet, strong ..	per ton	74 0 0
Iron, Staffs., bar ..	do.	5 15 0
Do. Galvanised Corru-	do.	10 5 0
gated sheet ..	do.	10 10 0
Lead, pig, Soft Foreign ..	do.	11 18 9
Do. do. English common	do.	12 5 0
Do. sheet English 3lb. per	do.	14 0 0
sq. ft. and upwards ..	do.	15 0 0
Do. pipe	do.	9 5 0
Nails, cut clasp, 3in. to 6in.	do.	9 0 0
Do. floor brads ..	do.	5 5 0
Steel, Staffs., Girders and	do.	6 5 0
Angles	do.	124 17 6
Do. do. Mild bars ..	do.	128 10 0
Tin, Foreign	do.	25 0 0
Do. English ingots ..	do.	22 5 0
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Do. Pitch	do.	2 5 0
Laths, log, Dantzic ..	per fath.	4 10 0
Do. Norrköping ..	per bundle	0 0 7
Deals, St. Petersburg, Yell.,	3 x 11 per std.	9 0 0

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Deals, Strömme, Yellow,		
Unsorted, 3 x 9 ..	per std.	10 0 0
Do. do. do. do. 2 x 7 ..	do.	8 5 0
Do. Blankaholme, Yellow,	do.	10 15 0
2nd, 4 x 9 ..	do.	9 0 0
Do. do. do. do. 4 x 8 ..	do.	10 5 0
Do. Archangel, Yell., 3rd,	do.	9 0 0
3 x 8 ..	do.	9 0 0
Do. do. do. do. 4th,	do.	8 5 0
3 x 8 ..	do.	7 5 0
Do. Sulina, Bosnian,	do.	16 10 0
White, 1st & 2nd, 3 x 11 ..	do.	14 15 0
Do. do. do. do. 4 x 12 ..	do.	13 0 0
Do. Räfsö, Yellow, 1st,	do.	13 0 0
4 x 9 ..	do.	9 15 0
Do. do. do. do. 2nd,	do.	10 5 0
4 x 9 ..	do.	15 10 0
Do. do. do. do. 3rd,	do.	10 5 0
3 x 8 ..	do.	9 0 0
Do. Nederkalix, Yellow,	do.	11 5 0
2nd, 3 x 8 ..	do.	10 15 0
Do. Sandvik, Dry Yell.,	do.	9 0 0
1st, 3 x 9 ..	do.	7 15 0
Do. Petschora, Yell., 3rd,	do.	6 5 0
3 x 9 ..	do.	6 10 0
Do. Quebec Spruce, 3rd,	do.	0 9 6
3 x 9 x 13ft. ..	do.	0 8 6
Do. St. John's Bright	do.	0 8 0
Spruce, 3rd, 3 x 9 ..	do.	0 8 0
Battens, all kinds ..	do.	0 8 0
Scantlings	do.	0 8 0
Flooring Boards in pre-	do.	0 8 0
pared, 1st ..	per square	0 9 6
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Do. 3rd, &c. ..	do.	0 8 0

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HARD WOODS.		
Ash, Quebec	per load	3 12 6
Birch, Miramichi, Planks,	do.	0 0 11
3 x 5 to 16in. ..	per cu. ft.	0 0 11
Box, Turkey	per ton	15 0 0
Cedar, Cuba	per ft. sup.	0 0 3
Do. Honduras	do.	0 0 4
Do. Tobasco	do.	0 0 5
Elm, Quebec	per load	4 2 6
Mahogany, Average Price	do.	0 0 5
for Cargo, Honduras ..	per ft. sup.	0 0 5
Do. African	do.	0 0 3
Do. St. Domingo ..	do.	0 0 3
Do. Cuba	do.	0 0 2
Do. Lagos	do.	0 0 3
Do. Benin	do.	0 0 3
Do. Tobasco	do.	0 0 5
Oak, Libau, Crown	do.	2 15 0
Wainscot logs ..	per load	2 15 0

	£ s. d.	£ s. d.
Oak, Fiume round logs ..	pet load	3 7 0
Do. Quebec	do.	4 10 0
Teak, Rangoon, planks ..	do.	8 0 0
Do. do. logs	do.	11 5 9
Do. Indian planks ..	do.	12 5 5
Do. Moulmein logs ..	do.	6 10 0

Bankruptcies.

[Abbreviations: R.O.—receiving order; P.E.—public examination; C.C.—county court; O.R.—official receiver; Adj.—Adjudication.]

DURING THE WEEK ending May 13th twenty-eight failures in the building and timber trades in England and Wales were gazetted.

H. HIND, plumber, Burnley. R.O. May 3rd.
R. TOZER, builder, Merton. Adj. May 3rd.
J. ALLEN, builder, Pembroke Dock. Adj. May 6th.
J. CRITCHLEY, joiner and builder, Chorley. Adj. May 5th.
J. A. ODY, builder and contractor, Kidderminster. R.O. May 6th.
G. KEMP, builder, decorator and contractor, Sydenham. P.E., Greenwich C.C., June 14th, at 11. Adj. May 3rd.
W. H. SMALL, builder, Brockley. P.E., Greenwich C.C., May 31st, at 1. Adj. May 3rd.
W. T. SIER, builder and contractor and monumental mason, Newport, Mon. R.O. May 3rd.
C. FROST, carpenter, late builder, Wimbledon and Lewisham. P.E., Kingston C.C., June 7th, at 2.30.
J. HURST, builder and contractor, Wigan. Unsecured liabilities £1,325; assets £510; deficiency £815.
PAYNE, DAYMOND & Co., brick manufacturers, Ellesmere Port. R.O. May 3rd. First meeting, O.R.'s, Liverpool, May 18th, at 12. P.E. Birkenhead C.C., June 9th, at 11.
G. WESTALL, surveyor, London, W.C. R.O. May 5th. First meeting, Bankruptcy Court, May 20th, at 12. P.E., same, June 14th, at 11.30.
J. H. WINSOR, builder, Torquay. R.O. May 6th. First meeting, O.R.'s, Exeter, May 19th, at 10.30. P.E., The Castle, Exeter, same day, at 11.30.
A. J. TWAMLEY (trading as the Staffordshire Terra-Cotta and Fire Brick Co.), Hednesford, Stafford. Gross liabilities £6,138; deficiency £3,257. P.E., Walsall C.C., May 31st, at 11.30.
D. T. CAMERON, mechanical and electrical engineer, Saltash. R.O. May 4th. First meeting, O.R.'s, Plymouth, May 20th, at 11. P.E., Town Hall, East Stonehouse, May 31st, at 12.

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THE

BUILDERS' JOURNAL

AND ARCHITECTURAL RECORD.

May 25, 1904. Vol. 19, No. 485.

6, Great New Street, Fetter Lane, E.C.

Summary.

The Society of Architects' Registration Bill was brought forward in the House of Commons last week, but there is little prospect of it progressing this session. (Page 246.)

A scheme for settling disputes through the medium of local committees and a county conciliation board, with appeal if necessary to the Board of Trade, is being successfully put forward by the Yorkshire Federation of Building Trade Employers. (This page.)

The Institute of Builders have presented Mr. Howard Colls with a silver-gilt bowl in recognition of his public spirit in contesting the right of light-case against Home and Colonial Stores, Ltd. (Page xiii.)

Under the direction of Mr. Basil Champneys a new building has been erected on the south side of Manchester Cathedral accommodating the library and providing vestries for the clergy and choir, and a sacristy. The Jesus Chapel or chantry has been restored by removing the bookcases and screens which for forty years have obstructed the view. (Page 250.)

The new workmen's dwellings erected by the City of Westminster provide 793 rooms, divided into 342 tenements, accommodating about 1,600 persons. The rents range from 3s. to 4s. 3d. per week for one room to 11s. 6d. to 12s. 6d. for four rooms. (Page 252.)

Mr. E. S. Prior observes that in planning pathological schools the hospital model takes one but a little way. The ward system, with its lighting and ventilation, its isolations and publicities, the effective combination of which makes the hospital plan, has no counterpart in the necessities of a building which is essentially not a dormitory but a workshop, a group of cells for hermits of science. (Page 253.)

The western aisle of the south transept of St. Paul's Cathedral has been converted into the baptistery and Wren's font removed there from the Consistory Court. (Page 254.)

The Leicester and Leicestershire Society of Architects adopted the R.I.B.A. form of agreement and conditions of contract subject to such alterations in respect of wording as to make "quantities" and "specification" interchangeable terms, "and in reference to the undesirability of any charge for measuring up being made through the builder." (Page 251.)

The Great Hall at the new Birmingham University will be one of the finest and largest buildings in the district, being 150ft. long and 75ft. wide. The engineering laboratories will have no equal in size or equipment in any such institution in the Kingdom. The electrical laboratory will be 115ft. by 50ft. and the hydraulic laboratory 110ft. by 42ft. (Page 251.)

London's New "Tubes." TEN years hence the means of travelling about London will be very different to what they are now. Possibly there may be overhead railways in some parts, but at any rate the underground system will be very complete. Even now we are almost within use of the best part of that system, for it will not be long before electric trains are running on the "Underground," while several lines of new "tubes" are being rapidly constructed; as regards the "Underground," however, we may wonder what will be done with the London and North-Western, Great Western, Great Northern and Midland trains that now pass constantly through, because the place would still be an inferno, and all whitewashing futile, unless some arrangement for electric traction were made by these companies. But though the London "Underground" covers a very large circuit, there is much need of easy means of communication between many intermediate parts of the great city, and as illustrating what a convenience the new "tubes" will be we may briefly sketch the course of the Brompton and Piccadilly Circus and the Great Northern and Strand railways, the tunnelling for which was begun in 1902 and is now more than half completed. The former extends from a junction with the District Railway west of Earl's Court Station, to Holborn, at the upper end of the new County Council street, where it joins the Great Northern and Strand railway to King's Cross and Finsbury Park. From its junction with the District the new railway proceeds to South Kensington Station (where an underground station will be constructed below the existing one) and then along the Fulham Road to "Brompton Road Station," almost adjoining the Oratory. Thence it proceeds to a station at the upper end of Sloane Street and along Knightsbridge to Hyde Park Corner, where a station will be provided adjoining St. George's Hospital. The line then proceeds along Piccadilly to Piccadilly Circus, with stations in Down Street and Dover Street. At Piccadilly Circus there will be a very large station for interchange with the Baker Street and Waterloo "tube," under which line the railway crosses at a depth of 108ft. from the surface of the road. The line then proceeds along Coventry Street to another interchange station with the Charing Cross, Euston and Hampstead railway in Charing Cross Road, opposite the Hippodrome, then along Long Acre (with a station adjoining Covent Garden) to Holborn, Russell Square, under King's Cross Railway Station, and thence under the Great Northern Railway as far as

Finsbury Park. In forming the tunnels the ordinary "Greathead" shield was used to commence with, but after the works had been in progress for a short time an improvement was effected by fixing an electrically-driven excavating wheel at the face of the shield, which obviated the necessity of the clay being excavated by hand in order to allow the shield to push forward. This appliance has proved to be a great success. With the original "Greathead" shield the maximum number of tunnel rings completed in any week was about forty, whereas with the new rotary excavating machine as many as seventy-two rings have been inserted.

An Admirable Scheme. EVERY level-headed man must feel that disputes such as those which arise in the building trades are best settled by arbitration. Strikes and lock-outs are barbarisms, and they prove disastrous to all concerned. We are therefore very glad to see that the Yorkshire Federation of Building Trade Employers are successfully proceeding with a "closer union scheme" between themselves and the men. Last week a most amicable conference of ten representatives of each side was held at York, when the scheme was agreed to and a resolution passed referring it to the respective national associations in the hope that it will find general adoption. This scheme comprises five clauses, and will be finally considered next month after a poll of the operative members has been taken. The first clause advocates the appointment of local committees, both masters and men, to deal with minor disputes. The second clause recommends that a county conciliation board be instituted, elected annually, and consisting of two representatives from each section of the building trades and a similar number representing the employers, whose duty it shall be to consider any question on appeal from the local committees. The third clause relates to the convening of meetings; the fourth provides for appeal, if necessary, to the Board of Trade for the appointment of a referee, whose decision shall be final and binding on both parties; while the fifth clause clearly defines that on no pretext shall work be stopped pending the settlement of any dispute or alteration of rules. It will thus be seen that the scheme is an admirable one, and we sincerely trust it will be carried into effect. Questions of wages being thus provided for, we would suggest that some scheme be developed to improve the status of the workman, in which endeavour the trade unions should take the leading part.

BY-WAYS OF ITALY.

Montepulciano, Pienza and San Quirico.

By F. HAMILTON JACKSON, R.B.A.

(Continued from p. 173, No. 479.)

MONTEPULCIANO lies on a hill which forms part of the chain dividing Val di Chiana from Val d'Orcia, six miles from the station and 2,070ft. above the sea. The road by which it is approached winds a good deal, ascending steadily between olives and cypresses, with very little fencing of any kind, only here and there some barbed wire. Often one can walk under the olive trees, and in one place the bank is covered with the noble foliage of the globe artichoke. The view is most extensive over hill and valley, and three lakes are in sight in fine weather—that of Chiusi, of Montepulciano, and in the distance that of Thrasymene. The walls are about a mile round, and there are four gates and two posterns by which the town may be entered. At the top of the long main street is a fortress, and another at the bottom of it; it ascends continually, with turnings and twistings which entirely upset one's idea of direction. The line of the sides is frequently broken by steps which ascend under dark arches to the higher level or descend as rapidly, and in bad weather the mist from the low clouds drives in with the wind at each opening of "vicolo," or larger alley. At the top is the official square where the cathedral faces the Palazzo

Pubblico at an angle, in the centre of which is a rather mean Garibaldi monument. The Palazzo Pubblico was inhabited in 1381, but the façade, imitated from the Palazzo Vecchio at Florence, is not earlier than 1515, Rohault de Fleury says. It has torch or banner holders of wrought-iron above the stone bench which runs along the base.

The parish church, made the Cathedral of S. Maria in 1561 under Pius IV., is mentioned in a document of the eighth century under Luitprard, king of the Lombards; but the ancient church was demolished early in the seventeenth century to enlarge the piazza, and the present cathedral built. The fifteenth-century campanile was preserved. It was built from the designs of Bartolommeo Ammanati, enlarged by Lo Scalzo, finished in 1680 and consecrated in 1710. It was restored in 1888. Over the high altar is a picture by Taddeo di Bartolo—the Death, Assumption and Coronation of the Virgin. The celebrated monument to Bartolommeo Aragazzi, secretary to Martin V., was once in this church. It was erected in 1427-9 by Michelozzo, assisted by Donatello, but the fragments which still remain have little affinity with his work. It was taken down in the eighteenth century and these portions only preserved. They consist of the recumbent statue of Aragazzi to the left of the principal entrance, two allegorical reliefs, one on each pier at the bottom of the nave, a frieze of cherubs with garlands now forming part of the high altar, and a Christ which looks more like a St. Peter.

The church is vaulted with a barrel-vault and has a dome at the crossing; the form of the arches here is more than a semicircle. The nave has five bays and the vaulting of the aisles is quadripartite. The organ is in the apse behind the high altar, in the same place in which it used to be found in many Nonconformist places of worship (so extremes meet!), and there is a singing gallery in the usual place above the choir stalls. The floor is of tiles with ribs of stone connecting the piers and running up the centre of the nave and aisles. The proportions are good without being strikingly so, the unconstructional features are plastered, and the constructional forms emphasized by the grey stone used in building.

The most celebrated building in Montepulciano is the Madonna of San Biagio, built by Antonio da Sangallo the Elder in 1518, and it has been most highly praised. Repetti says of it: "There is no building which can be compared with it unless it be the Madonna delle Carceri at Prato, the work of his brother Giuliano." It is a Greek cross in plan with two campanili (only one of which has been completed) in line with the principal façade, and a semi-circular tribune. The arms of the cross have Doric pilasters coupled to columns, and between the intercolumniations are the chapels. Three doors open into the church, one in the centre of each arm. The roof has barrel-vaults and the drum of the central dome rests on a cornice, having sixteen Ionic pilasters, above which is the dome with its lantern. The campanile has the first order Doric, the second Ionic, and the third and fourth Corinthian, the last terminated with an eight-sided pyramid ornamented with paneling. It cost more than 100,000 ducats. The tribune has four pilasters with a cornice and balustrade; the high altar was decorated in 1584 by Lisandro and Giovanozzo Albertini. It has a Virgin standing on the moon in high relief, gilded, in the centre panel. The inlaid marble altar-rail and the front of the singing gallery look rather later. Close by is San Gallo's house, now the Canonica, built in 1518, with a pretty loggia of two storeys and a well between it and the church.

In the main street is a column bearing the Florentine Marzocco, several rather fine palaces, such as the Palazzo Tarugi, built by Vignola, the Palazzo Buccelli, with Etruscan reliefs and inscriptions built into its façade, and the Palazzo Avignanesi, of the latter half of the sixteenth century. The church of S. Agostino has a very curious façade, finished in 1508, of mixed Gothic and Renaissance details, opposite to which is a strange coloured manikin which strikes the hours. The cloister of S. Francesco is of the thirteenth century. Near to it, in the oratory of the Misericordia, is an altar-piece of the Della Robbia school, which stands recessed beneath a low-browed vault—angels and God the Father around a little tabernacle, with a predella—white figures on a blue ground. The market hall, built by Vignola, has three round arches on pillars, with the Medici "palle" on shields above them, and an upper storey. At the corner of the Via Ricci, close by, is the Palazzo Bombagli, a Gothic brick building with marble colonettes and lions, and the ancient palace of the Neri; and there are many other mediæval houses disguised by later alterations and additions.

In the cathedral piazza are the Palazzo Nobile Tarugi, probably designed by Francesco da San Gallo, and the Palazzo Conducci del Monte, the architect of which was Antonio da San Gallo the Elder; opposite the side of the former is a handsome well-head of 1520, in the upper part of which two conversational lions uphold a shield, which shows by the holes left in it that the charges were once attached to it in bronze. The balustrade of the upper storey of the



WELL AT MONTEPULCIANO. DRAWN BY F. HAMILTON JACKSON, R.B.A.

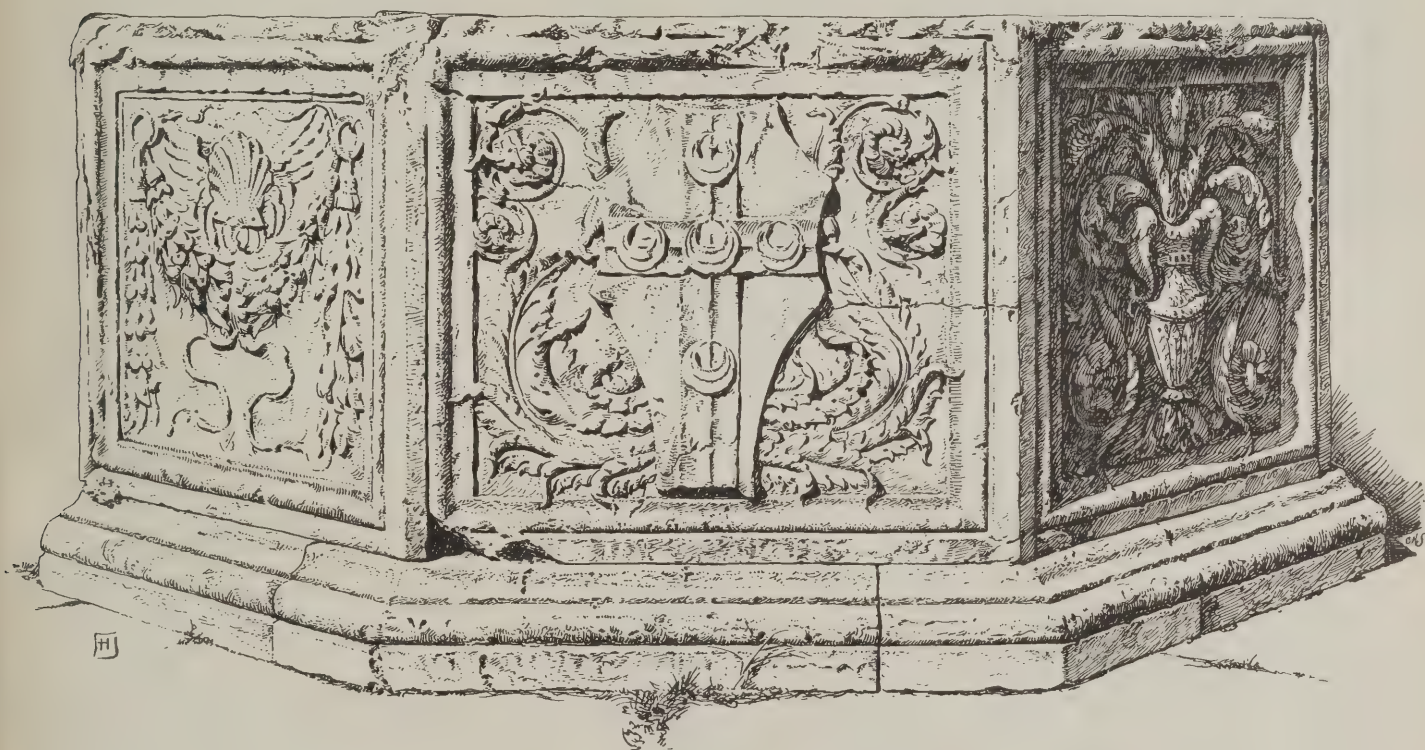
Palazzo Nobile Tarugi weighs rather unpleasantly on the pediments of the windows of the *piano nobile*, and these windows are badly placed; otherwise the proportions are good. There was a loggia at the corner in the top storey, with a slim Doric column above each window, which is now built up; the darks must have had a fine effect. Half of the ground floor is given up to an open arcade; at the corner of the roof is a device pierced in thin metal projecting upwards, the arms of the family: in the Palazzo Contucci they are on a great stone shield, projecting from the angle in the usual apparently insecure fashion. This palace has a central arched doorway with long vousoirs flanked by a small square-headed window on each side, and a row of five pedimented windows on the first floor. Above is an attic with five small square windows having fantastically-shaped framings. The house where Poliziano was born is No. 1 in the street of that name, a brick building of the fourteenth century with several inscriptions.

pulciano, and may conveniently be visited from that place by carriage, going on to S. Quirico and striking the railway again at Torrenieri. Its name was originally Corsignano, and here Æneas Sylvius Piccolomini was born in 1405. When he became pope as Pius II. he determined to beautify his birthplace and changed its name to Pienza, the town of Pius. He called in Bernardo Rossellino, the Florentine, and Francesco di Giorgio, the Sienese, to build cathedral and palaces, which all face on to the Piazza del Duomo and were erected between 1460 and 1464. It is a little oval city on the summit of a hill which is precipitous on the east side. The walls are now almost entirely destroyed. There are three gates—the Porta Marelllo on the side of S. Quirico, the Porto del Ciglio towards Chiusi, and the Porta al Santo towards the Val d'Orcia.

The cathedral was designed by Rossellino, as Gobellino says, from sketches supplied by Pius II. It is in two storeys. The lower has four altars, with altar-pieces and a

Publico with a colonnade. The bishop's palace is at the right of the cathedral, and the Palazzo Piccolomini, with a rusticated lower storey in combination with pilasters, to the right of the Palazzo Pubblico. This palace has a fine court with traces of frescoes, and in front of it is a fountain of 1462, much like the well-head at Montepulciano already mentioned. In the garden is another with carved panels, illustrated on this page. Other palaces were built in the place by courtier cardinals. The Opera del Duomo possess several ecclesiastical vestments, including those of Pius II., and the cathedral treasury (now in the Palazzo Piccolomini) contains many fine examples of goldsmith's work. The town suffered severely in the wars of the sixteenth century, and between 1553 and 1558 was invested, taken and abandoned thirteen times (!) during the last sieges of Siena and Montalcino. In 1559 it yielded itself to Cosimo, grand duke of Tuscany.

San Quirico is first heard of at the beginning of the eighth century, when its parish church



WELL-HEAD AT PIENZA. DRAWN BY F. HAMILTON JACKSON R.B.A.

It is believed that there was an Etruscan town on the site of Montepulciano, and its foundation has been ascribed to Lars Porsenna, but the first mention of the place occurs in 715 A.D. It was a continual bone of contention between Florence and Siena, and suffered much at the hands of one and the other. In 1232 the Sienese sacked it and destroyed more than 1,000 houses in the city and district, and all the public and private documents were then lost. About 1360 one of the Pecora de' Cavalieri being lord of the place was attacked by the Sienese, and the populace joined in with such goodwill that his palace and the Palazzo Pubblico were sacked, and he put in prison. The next day they broke into the prison and "tore him into so many little pieces that he could not be buried!" The Sienese lords were so disgusted by this that they killed a number of the people. The town was devoted to the Medici, and had much favour from them.

Pienza is about nine miles from Monte-

baptistry. In the façade of the upper church there are three well-proportioned doors, and semicircular niches which were intended for statues. The whole façade, including the steps, is of white travertine as far as appearances go. The interior has three aisles with semicircular vaults resting on eight columns, four of which are of one height and form, while the other four are different. Gobellino says that when four had been erected and the capitals placed in position Rossellino judged that the vaulting would be too low, and to put matters right set up on the capitals some pilasters like square columns so as to match the height of the others for the springing of the vaults. The choir stalls are Gothic in style, though made in 1462. In the right transept is a Madonna with four saints by Matteo da Siena. In a chapel to the left of the high altar is an Assumption by Vecchietta, and in the left transept a Madonna and four saints by Sano di Pietro.

Opposite the cathedral is the Palazzo

is mentioned. It was then and for long after known as S. Quirico in Osenna. Towards the eleventh century it had its own lords, one of whom, a Countess Willa, gave much to the abbey of S. Salvatore on Monte Amiata. It became afterwards, from its convenient position, a royal court and frequent residence of imperial vicars. This *corte regia* appears to have ceased to exist after the death of Frederick II, at about which time S. Quirico became the seat of a lesser podestà under that of Siena. It passed to Cosimo of Tuscany in 1559, at the same time as Pienza and Siena.

The walls were rebuilt by the Sienese in 1472; they still exist in a great part of the circuit up to the machicolations. Like Pienza it had three gates—the Porta Camaldoli towards Siena, the Porta Ferrea towards Radicofani, and the Porta Cappuccini towards Pienza. The Collegiata has three fine doorways. In the western façade, facing the Porta Camaldoli, there is a rose window

above one of them, of the twelfth century, with crocodiles or dragons carved on the lintel. The caps look almost thirteenth century, and there may have been restoration, since the door at the end of the transept bears date 1298. The fine one illustrated on this page has a curious mixture of forms of different dates, and the windows are also very strange. The interior was disfigured in the seventeenth century, at which time the campanile was built. The choir stalls are by Antonio Barili, of Siena, and were brought from the chapel of S. John Baptist

IN PARLIAMENT.

(By our Press Gallery Representative.)

MR. ATHERLEY-JONES has brought in the Bill to provide for the registration of architects, but there is little prospect of the measure progressing this session. It is backed by Sir W. Coddington, Mr. Wallace and Sir Christopher Furness.

In the House of Commons last week Captain Norton asked Lord Balcarras, as representing the First Commissioner of

expected that they would be at work again in the course of the summer.

Sir John Leng asked Lord Balcarras why part of the old Admiralty buildings was being taken down; whether the rest of the structure had been condemned as uninhabitable; and whether it was intended to erect on the site a new office for one of the Government Departments.

Lord Balcarras said the only part of the old Admiralty buildings to be taken down was a wall facing the Horse Guards Parade, which was to be rebuilt to correspond with the west wing. The answer to the second question was in the negative.

According to the annual report of the Scottish Prison Commissioners, which has been presented to Parliament, the chief building operations carried on in 1903 were at Inverness and Aberdeen. At Inverness the Commissioners had continued the works towards the completion of the new prison, and at Aberdeen the extension of the males' prison had been continued—it seemed likely that the forty-eight cells, which had been recently added, would be available for occupation in the early summer. Alterations and improvements were carried out at other towns. The report mentions that during the year 152 prisoners were instructed in the building trades.

In regard to the memorial to the late Marquis of Salisbury, which is to be erected in Westminster Abbey, Dr. Farquharson gave notice of a question asking the Prime Minister whether it was to be thrown open to competition and who was to select the sculptor and decide on the site or the material for the statue. The question, however, was not asked.

On Thursday last Mr. Mooney again brought up the subject of the Dublin College of Science. He asked the Secretary to the Treasury what were the fees Mr. Webb and Mr. Deane would receive, to which Mr. Victor Cavendish replied that the architects would receive between them the usual commission of 5 per cent.

ARCHITECT AND ENGINEER.

THE relations existing between architect and engineer in buildings for which they are jointly responsible have undergone many changes in recent years, as the result of the development of such works as factories, workshops, power stations and important city bridges; and the architect is now required to possess an intelligent, if not a complete, knowledge of engineering. This was especially emphasized by Mr. Stanley Peach in the paper on the design of electricity-generating stations which he read before the Institute a short time ago. Mr. Peach showed that from the moment the plant arrangement which the engineer requires has been given to the architect, the former never expects nor wishes to have anything more to do with the buildings until the architect is in a position to hand them over ready for the engineer's work to commence and the plant to be erected. But it is not to be understood that during this time the architect can work without reference to the engineer; quite the contrary. They must be in touch at every point from commencement to completion. The architect must be prepared to deal with the legal points affecting the buildings, their cost and every part of the construction. He must appreciate what the industry is, what its developments are likely to be, and have the same intelligent general knowledge about machinery and things electrical that he would be expected to have of the fittings, appointments and work of any other class of buildings more commonly met with in general practice.



SOUTH DOOR OF COLLEGIATA, S. QUIRICO. DRAWN BY F. HAMILTON JACKSON, R.B.A.

in that city: they are so much darkened by age as to be barely visible, even with the aid of a candle and with early afternoon light. In the adjacent church of the Misericordia is a high altar piece by Sodoma. Near the Porta Ferrea is another early church with a good doorway and a belfry above the chancel arch. There is a great palace erected in 1685-7 by Cardinal Flavio Chigi, and a neglected park called the Orti Leonini. The hills between this place and Asciano, near the latter, are of a curious barren chalky soil, which looks like nothing so much as heaps of London road scrapings.

(To be continued.)

Works, whether his attention had been drawn to the state of the asphalted paths in St. James's Park. Lord Balcarras said they would be repaired in the autumn, when the work could be carried out with the least inconvenience to the public.

In reply to Mr. Coghill, who asked why the fountains at the Bayswater end of the Long Water in Kensington Gardens had not been playing for more than eighteen months, Lord Balcarras said the stoppage was occasioned by the renewal and reconstruction of the boiler and pumping plant in the engine station at the head of the lake. They were stopped in June last, but were playing for a fortnight at Easter. It was

Enquiries Answered.

The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Bronze Figure for Memorial.

HIPPERHOLME.—W. W. L. writes: "Kindly give me the names and addresses of one or two firms who could supply a cast-bronze statue of a soldier suitable for a memorial, the figure to be about 7ft. high."

Messrs. Young & Co., Nine Elms Ironworks, S.W.; Messrs. Broad & Son, 42, Windmill Street, Tottenham Court Road, W.; and the Coalbrookdale Co., Ltd., of Queen Victoria Street, E.C.

Cement Floors.

DERBY.—CONSTANT READER writes: "What is the best solution for coating Portland-cement floors so as to preserve the face? I believe a solution of silicate of soda is used."

Silicate of soda is practically impossible of application to concrete *in situ*, and would do no good. Use good Portland cement and clean sand in the proportion of 2 to 1 and cover the surface with sawdust or sand kept constantly wet until it is quite hard, which will take at least a week.

Preservative for Wood.

REIGATE.—C. E. S. writes: "I should be glad of some information concerning 'Carbolineum' or similar preservative."

"Carbolineum Avenarius" is a preservative for wood made by Messrs. Peter Bartsch & Co., of Derby. Their London office is at 68, Queen Street, Cheapside, E.C., and they have an office at 8, Castle Street Arcade, Liverpool.

Alteration of Carpenter's Shop.

SANITAS writes: "A building contains a machine-shop and a carpenter's shop on either side of a division wall, and it is proposed to pull down a length of 23ft. 6in. of this wall and insert steel girders. There is no machinery on the first floor—only benches, &c. At the junction of the first floor with the division wall is a compound steel girder 9½in. by 9in. by 62lb. per ft., which for a span of 23ft. 6in. would give a safe distributed load of about 15 tons. Would this be sufficient to carry the load upon it? It would be the central support of about 730ft. super. of floor-space, and would also have to carry a column supporting the steel girder that carries the two roofs. Would the piers on which the ends of the girder are supported be strong enough if left as they are (22½in. by 9in.)? It is proposed to use 6in. by 5in. steel joists to carry the roofs: would these be strong enough? The vibration of the machinery on the ground floor needs to be taken into account."

The span of the girder carrying the roofs being 14ft. 9in., the depth should not be less than 8in.; and as the load will be about 8 tons, two 8in. by 4in. by 19lb. rolled steel joists will be required, bolted together with cast-iron distance-pieces between, or one 8in. by 5in. by 30lb. rolled steel joist. For the main girder 23ft. 6in. span, carrying part of two floors, with carpenters' benches and a proportion of material, as well as a column supporting the roof girders, the depth should be not less than 12in.; and the equivalent distributed load being about 46 tons, a compound girder should be used, say, Dorman, Long & Co.'s G8C8 14in. by 12in., consisting of two 12in. by 5in. by 39lb. rolled steel joists and four 12in. by ½in. plates. Each end should have a bearing 18in. long on a good York stone template 22½in. by 18in.,

and the piers, also 22½in. by 18in., should be rebuilt in cement, with proper foundations.

HENRY ADAMS.

Ionic Temple; Strains; Right of Light; Noise from Cistern.

MANCHESTER.—MAL writes: "(1) Kindly give a concise description of the Ionic temple on the Ilissus to accompany a study for the R.I.B.A. intermediate examination. (2) Please give an example to work out the formula for rolled steel joists from the following:—

$$\frac{WL}{8d} = \text{breaking strain on A.}$$

Strain to be taken as 7 tons per inch. Where can I find this formula explained? (3) What period must elapse before a right of light case can be commenced? (4) How can I prevent the noise produced from an ordinary w.c. syphon cistern which can be heard all over the house after flushing?"

(1) Probably the slight references in Fletcher's "History of Architecture" will be sufficient, or you might consult the "Antiquities of Ionia." The Order of the temple on the Ilissus at Athens is also given in C. J. P. Normand's "New Parallel of the Orders of Architecture," translated by A. Pugin. (2) Consult any of the well-known text-books on stresses and strains, such as Middleton's "Stresses and Thrusts," post free 4s. 6d. from our offices. (3) Nineteen years and a day. (4) The cheapest and most satisfactory thing to do would be to try another cistern.

Carlisle Cathedral.

MARYPORT.—CARLISLE writes: "What part of Carlisle Cathedral would be the best to measure for the R.I.B.A. intermediate examination, or is there anything more suitable within twenty miles of Carlisle?"

The east window at Carlisle Cathedral is one of the finest examples of Decorated tracery in the country, and would make a most excellent measured drawing. Half of the elevation should show the exterior and half the interior; and a good sheet of mouldings could also be made up from it. The greater part of the building is Norman (1092–1101). The choir (Early English) was destroyed by fire in 1292; the eastern bay of each of the choir aisles is a curious instance of Early English and Decorated work, evidently built soon after the fire, the lower part of the east window being also of this date. The upper part, with the tracery, is, according to Rickman, considerably later—not earlier than 1360, and probably the work of Bishop Appleby after 1363. In the north transept, which was rebuilt about 1401 by Bishop Strickland, work of the Perpendicular period will be found from which another sheet of drawings might well be prepared.

G. A. T. M.

Damp Walls; Payment for Work Done.

WREXHAM.—ENQUIRER writes: "A client for whom I have built a pair of villas refuses to pay the balance of my account because dampness appeared in some of the walls, although they were built with a 2in. cavity, with wire ties, thickness 11in. The walls affected face south and west. They have been finished about nine months. The client also refuses to pay the 2½ per cent. for measuring up extras and deductions and 5 per cent. on extra work, because he mentioned a sum which the houses were not to exceed; but it was found impossible to get a tender for the amount, although I prepared two sets of plans and quantities in the endeavour to do so, and for which I only charged half. (1) Can you suggest a cause for the dampness? The walls are faced with good pressed bricks and pointed in black mortar. (2) Can my employer legally or fairly deduct any of

my fees as set forth, especially considering that he did not accept the lowest tender?"

(1) The wall seems to have been too thin. Where hollow walls are used they should have a 4½in. face with a 9in. inner wall. If you desired to build an 11in. wall the proper method would have been to use one of the well-known building compositions in place of the cavity. (2) You are entitled to your full fees, and you should place the matter in the hands of a lawyer. The question of extra cost is a puerile objection on the client's part and cannot be sustained for a moment, while as regards the dampness he would have to prove culpable negligence, which is a very dangerous charge to bring, and we do not think it would be upheld. The client will need to be careful that he does not lay himself open to the charge of libel. We consider that architects should on all occasions make their clients clearly understand from the start that their requirements will entail extra cost, and to what extent, and so not lay themselves open to the charge of misrepresentation, bringing the profession into disrepute.

Measuring and Sketching in the Oxford Colleges.

EDINBURGH.—O. W. writes: "I propose to spend a fortnight at Oxford in June. Would it be possible to get into the colleges then? To whom should I apply for permission to measure and sketch? Is there any building in the surrounding district which you would recommend me to visit?"

There is little difficulty in getting into the colleges in June, but it may be quite another matter to obtain permission to measure and sketch, especially during term time. Application should be made to the Principal of each college separately, and to the Dean of the Cathedral. The city is, from an architectural point of view, one of the finest in Europe, so that very little in the way of permission should suffice for a good fortnight's work. While in the neighbourhood, Tewkesbury Abbey and Iffley Church should certainly be visited, sketching permits being first obtained. Several days might be spent at Tewkesbury with advantage.

G. A. T. M.

Drainage System for Country House.

KNARESBOROUGH.—H. B. writes: "I send rough tracing (not reproduced) showing proposed drainage system for a house in the country. It is intended to collect the rain-water from the eaves by means of a tank about 5ft. deep; waste water from sink to deliver into a sump about 120ft. from the house. Should the overflow run from the tank direct into the sink-waste drain?"

The tank overflow should not be directly connected to the foul drain, but should be arranged to discharge over a trapped surface gulley. The gulley should be fixed at such a level that, in the event of the foul drain being blocked, no back flow from the drain can enter the rainwater tank.

T. E. C.

Drain or Sewer.

MOLD.—PERPLEXED writes: "Has any settlement been arrived at regarding the question, 'When does a private drain become a public sewer?' referred to in your issue for June 24th, 1903? What is your opinion about the case shown by the accompanying sketch (not reproduced)?"

It is not probable that any definite settlement on this vexed question will be arrived at until the various Public Health Acts are amended or consolidated. In such an event no doubt some clearer definition of the terms "drain" and "sewer" would be forthcoming. We do not think that a local authority would permit new houses to be built with a system of combined drainage such as is indicated in your sketch.

T. E. C.

B 2



VIEW FROM THE SOUTH.

ALMSHOUSES AT SHEFFIELD.

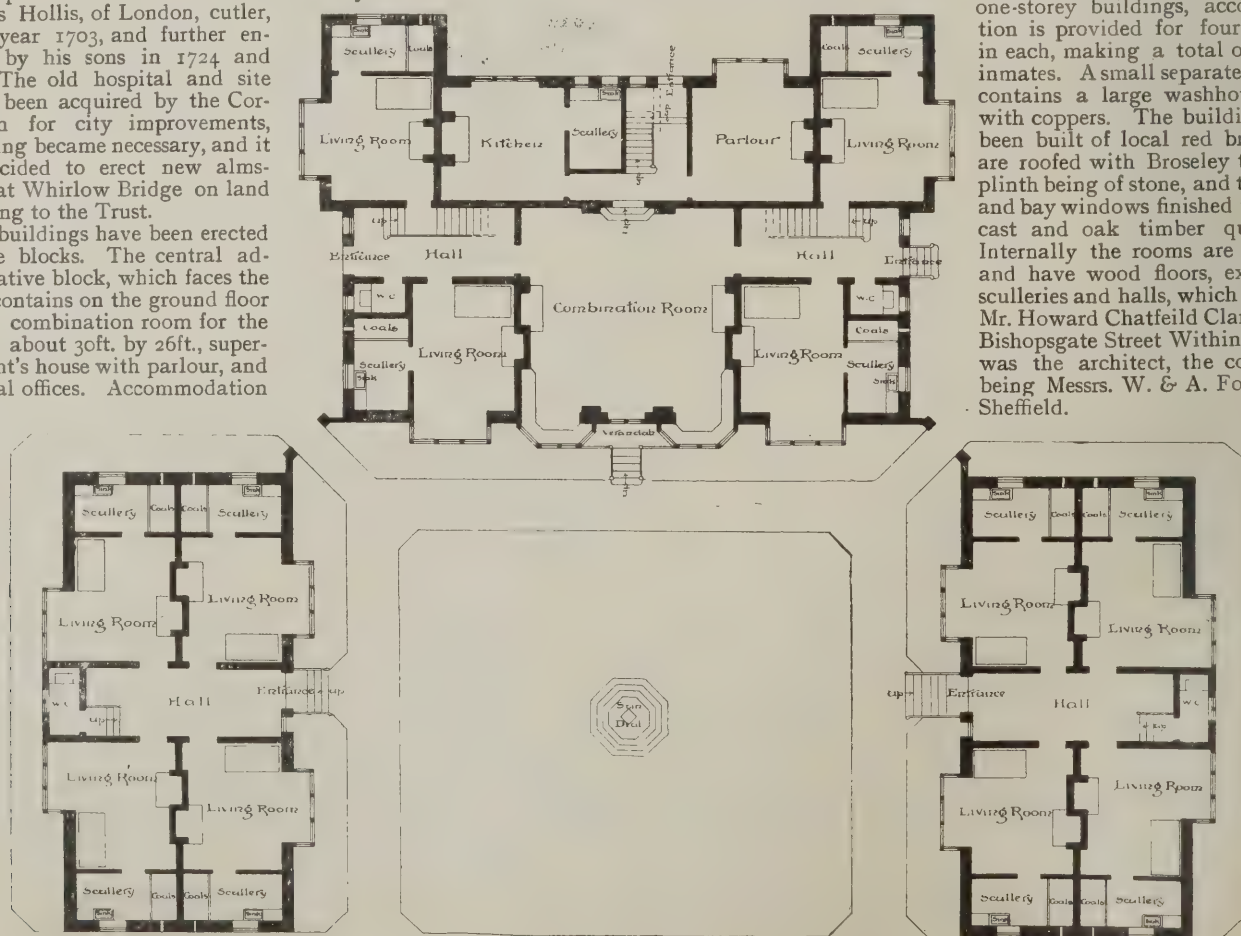
THE almshouses which have just been completed at Whirlow Bridge, Sheffield, take the place of the old hospital which for two hundred years stood in Bridge Street. The hospital was founded and endowed by Thomas Hollis, of London, cutler, in the year 1703, and further endowed by his sons in 1724 and 1726. The old hospital and site having been acquired by the Corporation for city improvements, rebuilding became necessary, and it was decided to erect new almshouses at Whirlow Bridge on land belonging to the Trust.

The buildings have been erected in three blocks. The central administrative block, which faces the south, contains on the ground floor a large combination room for the inmates about 30ft. by 26ft., superintendent's house with parlour, and the usual offices. Accommodation

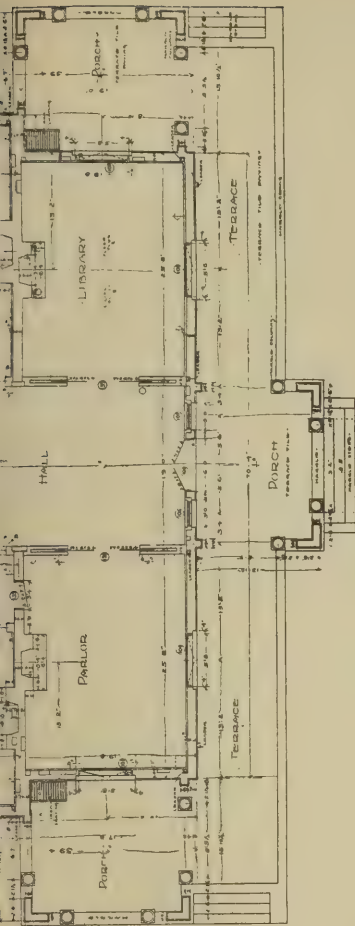
for four inmates is also provided on this floor. Each inmate has a living-room measuring 15ft. by 12ft., with a bed recess and a bay window in addition. A scullery and coal bunker are also provided. The living-room is fitted with a Yorkshire range, so that each inmate can cook for herself. On the upper floor of this block there is

accommodation for four more inmates of a similar character to that on the ground floor, with bathroom in addition. The northern half of this floor is occupied by the superintendent's bedrooms and bathroom, and over the combination room a sick-room and nurses' room are provided.

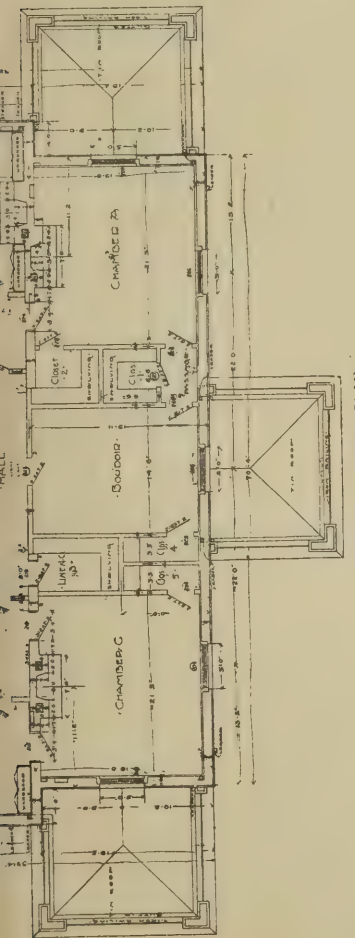
In the east and west blocks, which are one-storey buildings, accommodation is provided for four inmates in each, making a total of sixteen inmates. A small separate building contains a large washhouse fitted with coppers. The buildings have been built of local red bricks, and are roofed with Broseley tiles; the plinth being of stone, and the gables and bay windows finished in rough-cast and oak timber quartering. Internally the rooms are plastered and have wood floors, except the sculleries and halls, which are tiled. Mr. Howard Chatfield Clarke, of 63, Bishopsgate Street Within, London, was the architect, the contractors being Messrs. W. & A. Forsdike, of Sheffield.



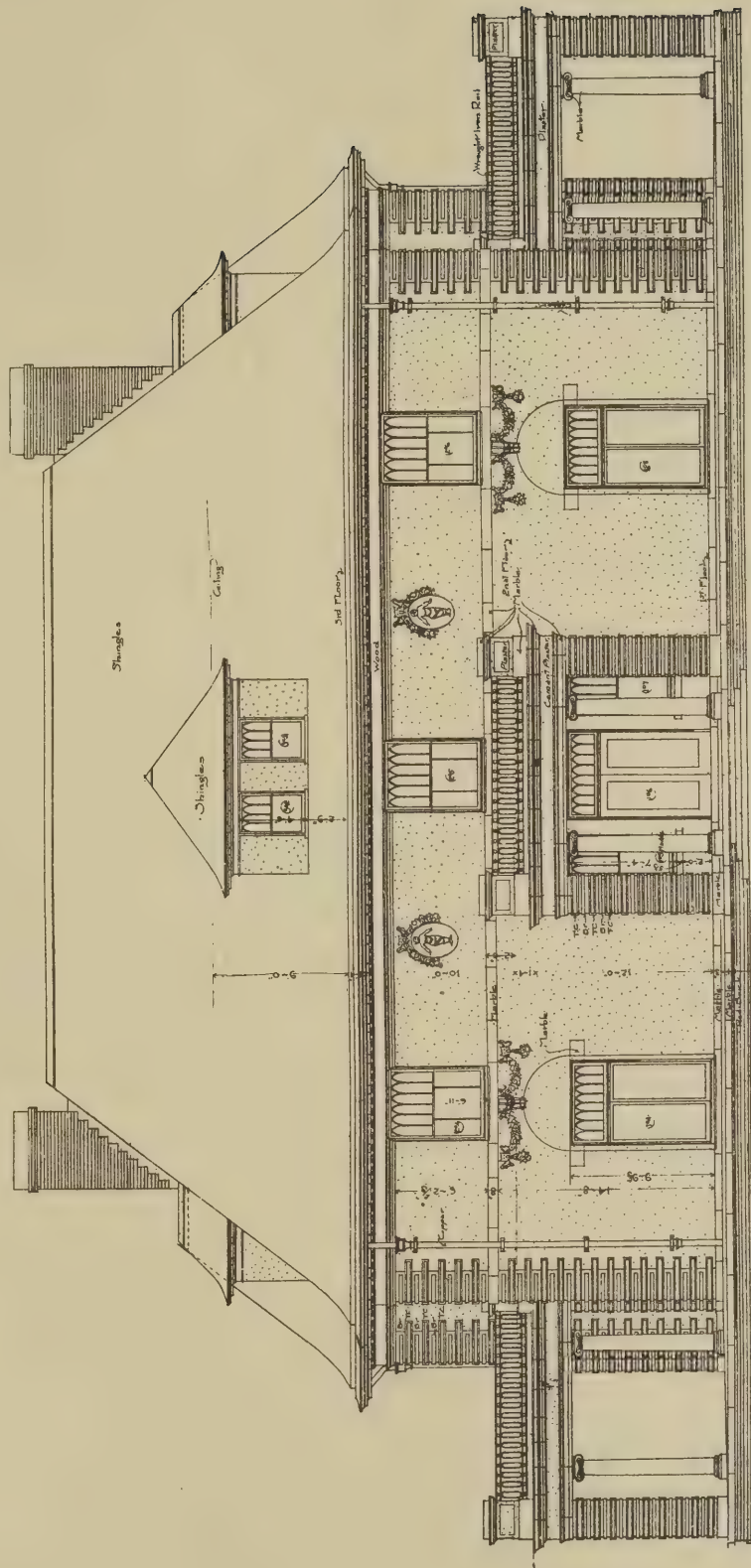
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FIRST - FLOOR PLAN.



SECOND - FLOOR PLAN.



FRONT ELEVATION.

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Bricks and Mortar.

Aphorism for the Week.

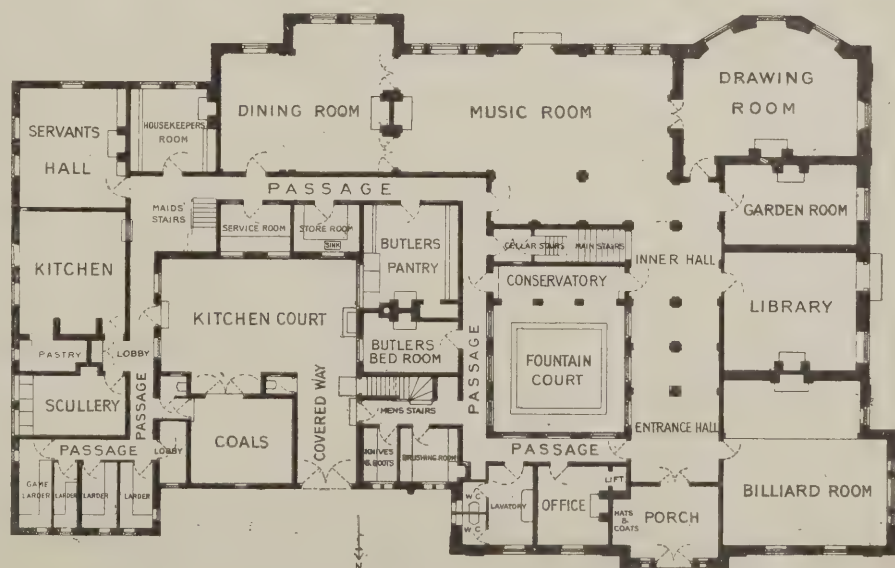
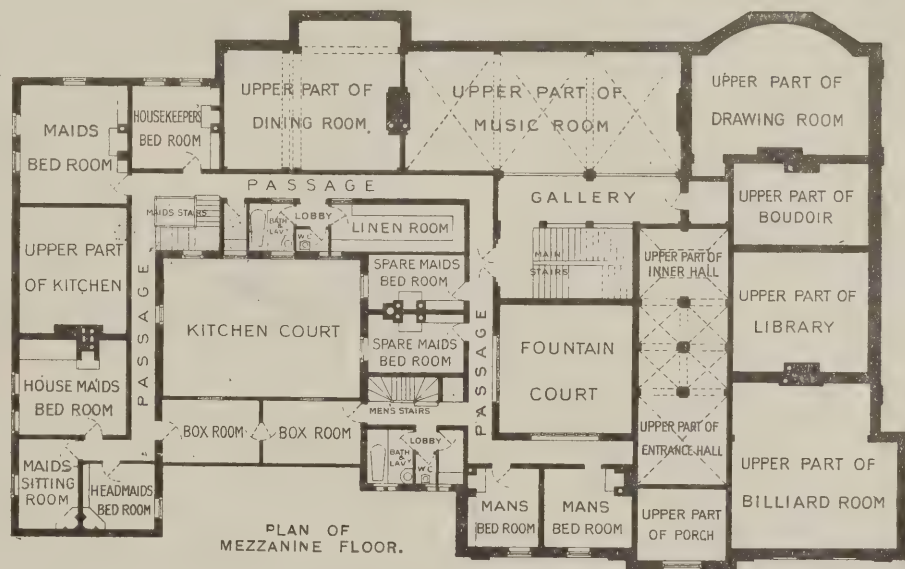
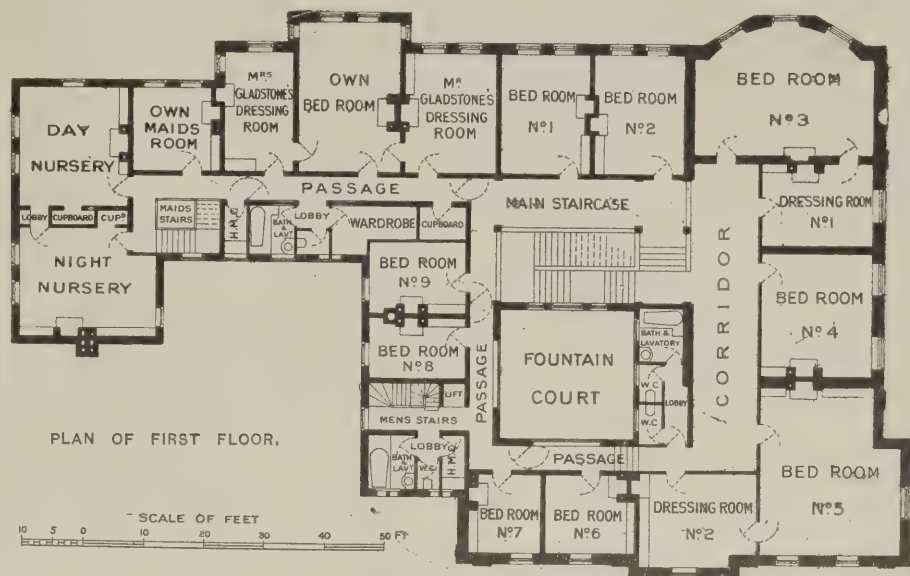
Now, there's Mr. Irwine has got notions o' building more nor most architects; for as for th' architects . . . most of 'em don't know where to set a chimney so as it shan't be quarrelling with a door.—ADAM BEDE.

Our Plates.

THE house at Lakewood is a good example of modern domestic work in America, and the arrangement of the plans is worthy of careful examination; it may be mentioned that in this instance we have followed the American practice of calling the ground floor the first floor, and the first the second, a practice regarded by some to be more logical than that adopted in this country. Details of the construction of the house, materials used, &c., are given on the elevations. Mr. Bruce Price died recently in Paris. He was one of the best-known architects in the United States.—Burton Hall, Cheshire, has been rebuilt for Mr. Herbert Gladstone. (The drawing is hung in this year's Academy.) With the exception of a portion of the walling at the south-west corner, all the old house has been pulled down. The main entrance was formerly on the west, where the boudoir now is. The position of the original drawing-room, with its bay, has been retained. The old dining-room becomes the new library, with certain alterations. Otherwise the plan is that of a new house. A new drive has been planned to approach the building from the main road and village on the north, where a forecourt has been designed with gardens opposite the front door. This arrangement leaves the south, the west and the south-east open, with a view of the River Dee and the Welsh mountains in the distance. The new terraces and gardens have been designed so as to be easily accessible from the principal rooms on the south and west. The plans on this page show the sizes and general disposition of the rooms. All the servants' bedrooms are placed on a mezzanine floor so as to avoid unnecessary stair-climbing and give easy access for service both to the ground and first floors. This arrangement became possible by making the height from floor to floor over the new south hall or music-room 18ft. 6in., that over the drawing-room (the old level) being 16ft. The porch, the double corridor leading to the reception-rooms, the music-room and parts of the dining-room and boudoir are either vaulted or domed in breeze-concrete prepared for a plaster finish. The fountain court will be paved and its walls finished in plaster limewhited. A red stone quarried on the estate has been used for the facing of the external walls. The dressed stones at all angles and jambs, &c., have been treated to show the characteristic chiselling peculiar to each mason employed. The body of the walling has a texture distinct from that of the dressed work, being cut to a surface by a method much employed in the district. Thick grey-green Westmoreland slates have been used for the roofs, the valleys having the slates worked over them in a curve instead of being finished as angles. The architects are Messrs. Nicholson & Corlette, of London, and the contractors Messrs. White & Sons, of Liverpool.—On the next page we give the ground-floor plan of the new public baths now being completed at Haggerston, London, N.E. (Mr. Alfred W. S. Cross, M.A., F.R.I.B.A., architect); the perspective view of the front, hung in this year's Royal Academy Exhibition, having been published as a centre-plate in our issue for last week, when some particulars of the building were also given. It may be mentioned that the ship vane over the centre turret was executed by Messrs. George Wragge, Ltd., of Manchester.

Earl's Court. THE Earl's Court Exhibition buildings have undergone many changes this year. The old Queen's Court has been practically reconstructed with buildings of greater height, of Renaissance character, and the bridge across the

lake has been remodelled. In the Western Gardens—whence one sees Maggiore with its mountains sharply outlined against the sky—are numerous statues and representations of Roman ruins, including the Forum in the third century A.D. (designed and constructed



BURTON HALL, CHESHIRE, FOR MR. HERBERT GLADSTONE: PLAN OF GROUND FLOOR. NICHOLSON AND CORLETTE, ARCHITECTS.

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Supplement to
THE BUILDERS' JOURNAL AND ARCHITECTURAL RECORD,
Wednesday, May 25th, 1904.



BURTON HALL, CHESHIRE.

NICHOLSON A



ORLETTE, ARCHITECTS. (ACADEMY, 1904.)

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up on the wall above the entrance to the chapter-house. The lower portion of the same wall has been wainscotted, and a raised seat has been provided for the chancellor of the diocese, who will in future hold his consistory court there. The work has been carried out under the direction of Mr. Basil Champneys, the cathedral architect.

Leicester and Leicestershire Society of Architects.

In the thirty-first annual report of this Society reference is made to the

R.I.B.A. form of agreement

and conditions of contract and the resolution of the Society adopting the form subject to such alterations in respect of wording as to make "quantities" and "specification" interchangeable terms, "and in reference to the undesirability of any charge for measuring up being made through the builder." The report goes on to say: "It is well known by provincial architects that in London the quantities and specification are two separate documents, whereas in the provinces they are more often than not embodied in one document; hence the insertion of the last clause in the contract. With regard to the latter part of the resolution this alteration was the outcome of the different system adopted in London to that of the provinces in the appointment of the quantity surveyor; the provincial architect almost invariably takes out his own quantities, and therefore the objection to the wording must be apparent." The following letter from the secretary of the R.I.B.A. is quoted: "The attention of the Council has been drawn to a not uncommon practice in certain parts of the country for architects to disregard the prime-cost clause (No. 27) in the Institute form of contract, and to allow builders the large and varying discounts to which merchants' prices are frequently subject, to the detriment of clients' interests. It having been the policy of the Institute to clear the ground between architect and client of every possibility of doubt as to open dealing on the part of the builder, the Council cannot but deprecate this laxity, and they urge architects to enforce rigidly the prime-cost clause for the sake both of uniformity of practice in the profession and the maintenance of the important principle the clause involves." The following resolutions were passed in respect of the reparation and restoration of St. Nicholas's Church tower, Leicester, now being executed under the direction of Mr. Charles Baker, a past-president of the Leicestershire Society: "(1) That the brickwork be not removed from the tower walls on the following grounds: (a) that it is not structurally necessary, (b) that it will not add to the beauty of the tower, (c) that to some extent it would destroy the historic continuity of the tower. (2) That this Council is strongly of opinion that the proposals of the architect, vicar and churchwardens with regard to the parapet and pinnacles should be adhered to, and that their further proposals for necessarily strengthening the angles of the tower by the insertion of squarely-worked new stones—where absolutely necessary—projecting to the original face be adopted, and that as many of the old stones be retained as possible." Copies of these resolutions were forwarded to the vicar and churchwardens, and in acknowledging them the vicar stated that they were in accord with resolution 2, but they did not take the same view of the matter in regard to the other resolution.—By collaboration with the headmaster of the Leicester Municipal School of Art a sum of £10 was subscribed towards the expenses of obtaining a professor from the Royal College of Art, London, to give a series of lectures to the School of Art students and the members of this Society. Prof. Beresford Pite, F.R.I.B.A., delivered the lectures, a series of five, at intervals of about a month.—The report is

very well produced and is illustrated by some excellent reproductions of drawings by Mr. George Nott of the eighteenth-century house in Friar Lane, Leicester, and the screen in St. Mary's Church, Leicester.

Devon and Exeter Architectural Society.

The seventeenth annual report of this Society, presented to the meeting held at Newton Abbot on May 14th, refers to a proposal that the Architectural Association of London should extend its teaching to the provinces in connection with local technical schools and colleges. Exeter, Bristol and Plymouth, for instance, might form a district for a paid visiting teacher. The Society issued a circular to every recognized practising architect in Devon and Cornwall asking whether they would support such a scheme, and out of seventy-five circulars sent twenty-one replies were received, all favourable. Particulars are now being obtained as to the provision of lecturers, but, by arrangement with the Architectural Association, students of the Society will be able in the autumn session to join the Class of Design and have their drawings criticized by the same visitor as in London.—Mr. A. S. Parker, in the course of his presidential address, said that although there were several provincial societies which were much older and stronger than their own, it was well to remember that the Devon and Exeter was the first to be allied with the Institute. It also appeared that they were the first Society to suggest to the London Architectural Association the extension of their teaching to the provinces in conjunction with the local societies. The question as to the best means of improving architectural education was of the greatest importance. He advocated a semi-collegiate training as a supplement to the tried and excellent system of pupilage. Turning to registration, he referred to the Institute committee, and the subject being *sub judice*, he was relieved from making any special comment beyond that he believed that, should a satisfactory Bill be agreed on and carried, architectural education would progress with rapid strides. A large number of students would not enter for the present Institute examinations because they were not compelled to, and their education suffered accordingly. Speaking of the preservation of ancient buildings, he said Exeter would have vastly gained had not vandalism been allowed to remove numbers of such edifices. He called to mind two especially fine ancient houses in North Street, removed comparatively recently for the widening of the street, though this could have been secured by allowing the pavement to run under the upper storeys, as seen in the Butterwalk at Dartmouth.—Mr. Charles Cole was elected president for the ensuing year, Mr. B. P. Shires vice-president, and Messrs. Bridgman, Tonar and Morris members of the Council. Mr. Harbottle Reed (hon. secretary) and Mr. O. Ralling (hon. treasurer) were re-elected.

The Queen Victoria Memorial.

Mr. M. H. SPIELMANN'S recent lecture at the Royal Institution on the Queen Victoria Memorial took the form of a commentary on a long series of lantern slides. Beginning with a brief reference to the preliminary arrangements for the erection of the memorial, he went on to give an account of what had been done by other countries which could show some noble monuments to monarchs departed. Taking Russia first, he showed views of the colossal equestrian statue of Peter the Great at St. Petersburg, the granite monolith erected in honour of Alexander I., and the monument to Nicholas I. and the Empress Catherine II. From Austria he selected the monument to the Empress Marie Theresa, from France the memorials to Gambetta and

Carnot, and from Spain the model of the monument proposed to Alphonso XII., which he criticized somewhat severely. From Belgium he took the monument of the canopied series—what Ruskin termed a church spire set on the ground—erected to King Leopold I. In Germany the finest work of the kind was the memorial to Frederick the Great in Berlin; among others shown on the screen was the national monument Germania, placed on the banks of the Rhine opposite Bingen to commemorate the founding of the German Empire. For those who did not think that much should be spent on the Queen Victoria Memorial the Italian memorial to Victor Emanuel was an object-lesson. Its cost was at first estimated at £360,000, but in 1898 over a million had been spent, and before the work was finished it was expected the expenditure would be two millions. This was the tribute of impoverished Italy to her great king; wealthy England had so far contributed only about an eighth of that sum for the memorial to her great Queen. Mr. Spielmann next showed plans and views of the designs which had been submitted for the architectural portion of the Queen's memorial by the five architects selected by the committee, and pointed out the chief features of the proposals of Mr. T. G. Jackson, Mr. Ernest George, Sir Thomas Drew and Sir Rowand Anderson. Still more fully he discussed the accepted design of Mr. Aston Webb, describing the original plan and the modifications subsequently adopted. The choice made by the committee, he thought, was generally approved. Mr. Webb's design would give a fine monument to London. He then went on to describe in considerable detail the sculptured portion of the memorial, which had been entrusted to Mr. Brock, the account being illustrated by numerous photographs taken from plaster models, which it was mentioned the sculptor had decided to have completely finished before he took in hand any of the actual work. The statuary along the processional road was also to be under the control of Mr. Brock, and the whole of the work was to be carried out in the finest and most durable materials. The only unsatisfactory feature in the whole scheme was the undignified and incongruous façade of Buckingham Palace.

Birmingham University Buildings.

As is perhaps well known, Messrs. Aston Webb & Ingress Bell have designed the main building of the new university at Bournbrook, Birmingham, in the form of a semicircle, the front of each block pointing towards the centre of University Road, which leads out of Edgbaston Park Road. There are at present being erected four out of the proposed ten T-shaped blocks. One of these, which, when the final scheme is completed, will form the centre block, is the "Great Hall," which will be used on Degree Day and for other public functions. Possibly it will also be used as an examination hall. It will be one of the finest and largest buildings in the district, the dimensions being 150ft. long and 75ft. wide. Underneath this will be the dining-rooms and kitchens for the students and staff. When facing the Great Hall the two blocks on the right are those to be used for engineering students. Here will be the huge laboratories, which will have no equal in size or equipment in any other such institution in Great Britain. The electrical laboratory on the ground floor will be 115ft. by 50ft., and this will form the centre portion of the T. The cross-piece will be used for a hydraulic laboratory 42ft. by 110ft. There is observable a huge pit for holding a quantity of water, so that various hydraulic laws which have been proved only for small quantities of water may be verified for much larger quantities. There will be also a large strength of materials

laboratory. During the temporary absence, through illness, of the Professor of Engineering the whole of the arrangements for the hydraulics and strength of materials laboratory have been carried out by Mr. F. H. Hummel, the lecturer on civil engineering, who has also been getting out the scheme for the large drawing-office: this will be on the top floor of the block, and will be fitted with all the most modern appliances for taking blue prints and copies of drawings. The building to the left of the Great Hall is to accommodate students in mining and metallurgy.

Workmen's Dwellings.

The workmen's dwellings in Page Street and Regency Street erected by the city of Westminster consist of three parallel blocks six storeys in height, between which are two roadways or playgrounds, each 40ft. wide. The buildings are faced with red bricks, relieved with dressings of artificial stone of a pale buff tint, and here and there cement ornaments. Inside the landings the staircases have dados of white and blue tiles. There are 793 rooms divided into 342 tenements, accommodating about 1,600 persons, and the rents of the tenements range from 3s. to 4s. 3d. per week for one room to 11s. 6d. to 12s. 6d. per week for four rooms. In order that the rents should be as low as possible the one-, two- and three-room tenements are on the "associated" system, i.e., the sanitary accommodation and laundries are shared by the tenants on each floor. The living-rooms have an average area of 154ft. All the three- and four-room tenements have entrance lobbies to give greater privacy. Every room is fitted with Venetian blinds, and each living-room is supplied with a close range with removable oven and a cupboard divided into two parts, the upper part in every case ventilated by means of direct communication with the open air, for the storage of food, and the lower part arranged as a coal bunker and as a receptacle for household utensils. Each bedroom has been provided with a stove and a good-sized cupboard for clothes. Every tenement is lighted by gas on the penny-in-the-slot system, and suitable gas cooking stoves are fixed in every living-room. On the landings are laundries, with boilers and glazed-ware washing troughs; the water supplies are also to be found on the landings. Additional cupboards for storage are fitted up and can be hired at a small charge per week. In the basement of one of the blocks in Jessel House are the bathrooms, nine in number, which are free to the tenants. There is an urn-room for the supply of hot water, and a drying-room; provision is even made for perambulators and cycles. The cost of the land and the buildings has been approximately £95,000, and the rents have been adjusted to a scale that will, after providing for a sinking fund to repay the total outlay on the buildings in sixty years and on the land in eighty years, give a nett return on the expenditure of 3¼ per cent. per annum. It is claimed therefore that the scheme is self-supporting.

The Manchester New Stock Exchange Competition, in which Mr. John Burnet, of Glasgow, was the assessor, has been won by Messrs. Bradshaw & Gass, of Bolton.

New Premises for the Birmingham Y.M.C.A. are approaching completion in Dale End. Messrs. Ewen Harper & Brother are the architects and Mr. W. Bishop is the builder. The total cost will be £30,000.

Northern Counties Deaf and Dumb Institution, Newcastle-on-Tyne.—In a limited competition for extensions to this building, estimated to cost £8,000, Mr. Stephen Piper, of Newcastle, was selected by the committee.

Views and Reviews.

English and Scottish Ironwork.

This is one of those very large and extensive publications that figure in architectural libraries. It is a collection of measured drawings of decorative wrought ironwork, chiefly gates and railings, supplemented by photographic reproductions, which combination forms the special feature of the work. Nineteen plates are devoted to Drayton House, Northamptonshire, eight to Belton House, Lincolnshire, twenty-four to examples at Cambridge and Oxford, and others to ironwork at Salisbury, Winchester, Beverley, Ely, York, Hampton Court and elsewhere in England, with some Scottish examples from Traquair House, Holyrood, Dumfries Town Hall, Hopetoun House, &c., making in all eighty fine plates, sixty-eight of which are reproduced by photo-lithography from the author's drawings, while the remainder are made up of collotypes of seventy-two photographs taken specially for this publication. The majority of the drawings are to a scale of in. to the foot, but where there are a number of gates, railings, &c., in connection with one house, small-scale key-plans of the house and grounds are given showing the various examples lettered for reference. Where the limits of the plate make it impossible to give an idea of the whole effect of a particular gate or railing, a key elevation to a scale of ½ in. to the foot is included, and wherever the details are especially interesting these have been reproduced quarter full-size, with smaller details full-size. The scales being uniform throughout, the relative size of the examples is at once apparent, while the inclusion of the photographs makes the record complete. Short descriptive notes accompany each plate, giving such dates as have been accessible, together with some critical remarks.

The book is imperial folio in size and is produced in the best possible manner, as we should expect from Mr. Batsford. The list of subscribers printed at the front testifies to its excellence, though we consider the title is rather more comprehensive than is warranted by the examples given.

"English and Scottish Wrought Ironwork," by Bailey Scott Murphy, architect. London: B. T. Batsford 94, High Holborn, price £3 3s. nett.

Wood Carving.

The first three books of the series of technical handbooks on artistic crafts edited by Prof. W. R. Lethaby and published by Mr. John Hogg have been complete successes, upholding the reputation of Mr. Lethaby and the real leaders of the arts and crafts movement, which has unfortunately produced a number of charlatans and parasites who misunderstand the movement, and whose ideal is novelty rather than originality, thus bringing upon us "L'Art Nouveau," that awful libel upon the English arts and crafts movement. Mr. George Jack, the author of this excellent manual on woodcarving, is well known as a woodcarver of great ability, both for technique and imaginative artistry. The book is undoubtedly the best guide to this branch of art extant. It is not an historical work, but a practical one, written with clearness and literary power by a practical man (in the best sense of the word), and a man too of great artistic talent. Archaeology is referred to only to illustrate methods. We may reiterate Prof. Lethaby's remark that it "contains some of the best suggestions as to architectural ornamentation under modern circumstances known to me." It would be superfluous for us to deal with the book at any length, as the points for criticism are very few; suffice it to say that all branches of the subject and anything directly allied to it are considered. The illustrations are excellent and well repro-

duced, collotypes and line blocks being used. Of course Mr. Jack takes the view that draughtsmanship without craftsmanship cannot produce art or architecture, or, as he expresses it, "invention and execution are strictly but one and the same thing." However much one may disagree, this is at least one side to the question. We may quote the following passage from Professor Lethaby's preface, which we heartily endorse: "Architects cannot forever go on plastering buildings over with trade copies of ancient artistic thinking, and they and the public must some day realize that it is not mere shapes, but only *thoughts*, which will make reasonable the enormous labour spent on the decoration of buildings. Mere structure will always justify itself, and architects who cannot obtain living ornamentation will do well to fall back on structure well fitted for its purpose, and as finely finished as may be without carvings and other adornments. It would be better still if architects would make the demand for a more intellectual code of ornament than we have been accustomed to for so long. On the side of the carver, either in wood or stone, we want men who will give us their own thought in their own work—as artists, that is—and will not be content to be mere hacks supplying imitations of all styles to order."

"Wood Carving: Design and Workmanship," by George Jack. London: John Hogg, 13, Paternoster Row, E.C., price 5s. nett.

Graphic Statics.

This book, like others of its kind, is written for the elementary student and explains graphic statics very fully and very diffusely, with a plentiful distribution of examples and exercises and involved explanations, and much reference to diagrams in the Euclid manner, specially prepared for students of science and technical schools, and those entering for the usual examinations. The student is to be pitied and the writers of such burdensome, soul-wearying and time-wasting books are to be condemned. The subject of graphic statics is very simple, and all that this book contains could be summarized into a very few pages, gaining in clearness and time and enabling the student to grasp the whole purpose and trend of the subject. Like all the text-books, the points of difficulty in actual practice, such as wind loads on elaborate roof-trusses, which cannot be solved by the ordinary methods, are not dealt with, which leads one to conclude that the author is not a practical man. The publication of this book was unnecessary, for it does not improve on previous works on the subject.

"The Elementary Principles of Graphic Statics," by Edward Hardy. London: B. T. Batsford, 94, High Holborn, W.C.

At St. Clement Danes Church a number of stained-glass windows are being added. The work is in the hands of Mr. Thomas F. Curtis (Wood Hughes), ecclesiastical decorator, and the expense will be borne principally by the rector, the Rev. J. J. H. Septimus Pennington.

The Competition for Branch Libraries at Eccleston and Sutton has been won by Messrs. Briggs & Wolstenholme, of Blackburn, who were placed first for both libraries, while Mr. Lloyd E. Ward, of Birmingham, was placed second for Eccleston Library, and Mr. Albert Warburton, of Warrington, second for Sutton.

A School Competition at Southall.—In a limited competition for school buildings to be erected at Southall by the Middlesex County Council, in which Mr. Paul Waterhouse, F.R.I.B.A., was the assessor, Mr. G. E. T. Laurence, A.R.I.B.A., of London, was placed first, Mr. T. Mann second and Mr. W. Eves third.

PATHOLOGICAL SCHOOLS.

IN the "Lancet" for April 30th Mr. Edward S. Prior, M.A., architect of the new medical schools at Cambridge, makes "Some Remarks on Pathological Schools." At the outset he alludes to the essentially new treatment which such schools require. "The hospital model takes one but a little way. The ward system, with its lighting and ventilation, its isolations and publicities, the effective combination of which makes the hospital plan, has no counterpart in the necessities of a building which is essentially not a dormitory but a workshop; which is no caravansary for sojourners under observation but rather a group of cells for the training of neophytes, the hermits of science who may attain perfection."

The essentials of construction for medical schools are (1) perfect solidity of all the enclosing construction, so that no unfilled spaces are left in its walls, floors or roofs; (2) a smoothness of all the surfaces and the elimination of all crevices and ledges for dust; and (3) such a treatment for all corners and angles that they can be easily and thoroughly cleaned. One principle, if steadily adhered to, will allow perfect cleanliness if it does not actually enforce it. It is this—that the level tops and all ledges or holes that are necessary should be where they are directly open to the eye, and, secondly, where their cleaning can be thorough and systematic. All the furniture of a laboratory can be constructed and placed so that it is sealed from dust as to its interior, and so that its exterior can be submitted to constant cleansing.

There are difficulties, no doubt, with the pipes—the light and water conductors—the wastes, taps, sinks and shaftings of a laboratory. The wastes can be glazed channels in the floors, made to run straight to the outside of the building, with removable covers so that their whole lengths can be constantly inspected and flushed. All pipes can be best managed by their being placed on the walls, where they can be directly got at and where the least accumulation of dust and dirt about them can be detected. They should be painted white so that the dirt may be conspicuous, and this provocation to cleanliness should be everywhere adopted, for it is fortunately supported technically by the fact that white paint is the only pure paint, all colouring added thereto being a detrimental adulteration. . . . Most of the glassy wall-coverings offered have the objection that, perfect in themselves, their joints cannot be made thorough, so that the attachment of them to the walls leaves crevices. And too often the most glassy surfaces carry in themselves the seeds of destruction. In fact, the higher the glaze the greater the tendency to scale, owing to the high tension and the uneven contractions of the surface and under-material. The best success has been with the thick rougher glazes and coarser makes, the jointings of which can be made thorough. . . . The controversial question of heating and ventilation has to be reckoned with . . . particularly the mechanical appliances necessary for the shifting of the air and the fittings required to regulate its proper course throughout the rooms. . . . The lighting of laboratories is also a special point in their architecture, and one that is often shirked or considered as an afterthought instead of a consistent factor in the problem of their design. For most of their purposes north light is the only one that is satisfactory. East light is better than west, since the use will be more often in the afternoon, but south lighting should be used only for the less distinctive departments and offices of a medical school. But it is the make of the windows that needs specializing, seeing that their use is to light microscope

practice. They have to be made convenient for two ranges of tables, one at the windows and the other back in the room. It has been found that at table-height and at a distance of 10ft. (which is a convenient distance for the second range of microscopes) an unbroken oblong opening of glass 24in. by 20in. gives the proper field. The divisions to carry such sheets of glass need to be strong, and so are best of iron. There is no need to make them thick stone mullions and transoms, as under the belated traditions of style is often done as a sort of compromise between use and art. For art's sake the top lights are glazed in little squares; while for use formless big sheets below advertise themselves as in obvious disagreement. Indeed, thick mullions and the heavy transom become particularly bad for the microscope that has to be used at a distance. The best lighting of a working laboratory for a class of students where tables have been ranged behind one another is that of the weaving-shed with north sloping skylights. But in order that the necessary bars of the skylight construction may not spoil the microscope field for work at the tables the height of the room must be as low as possible. The nearer the skylights are to the work the greater the unbroken spaces in the reflection. Such weaving-shed roofs require careful construction to be successful. The ordinary steel building of roofs has had no thought of minimizing to the utmost the ledges for dust and dirt. . . .

Besides the laboratories in which microscopes are in use the equipment of a medical school needs lecture theatres and oral classrooms. Now here, too, we come upon conditions which separate the building of the medical school from that of others. Under modern conditions of teaching by the projection lantern the use of artificial light in the medical lecture-room is almost constantly required. Hence it is want of economy laboriously to give what is not wanted for the lecture theatre, an outlook upon open areas the wealth of daylight of which is of such importance elsewhere. Yet so strictly does architectural convention apply its canons that the building of a room without admission of daylight to it is reckoned a freak. For the pathological school this vagary is, however, not only to be sanctioned but made the direct way to success in planning economically and to the purpose of the building.

On all sides do the conventions which govern the planning of most public buildings fail us for the dispositions of a medical school. Access by means of broad corridors, the symmetrical approach to the rooms and the serried arrangement of them in sets are the qualities which show well in the paper planning of our public buildings and obtain their reward by success in competitions. But the medical school needs none of these, and indeed must count all such stateliness as waste of space. The arrangements of workshops and factories, not those of public offices, are most convenient to it. . . .

As to its lecture theatre, a large preparation room should be immediately attached to the rostrum of the lecturer, whose table should be in sight from all the benches and provided with special arrangements for lantern work. It is a useful point that the access corridors by which the students reach the theatre should be large enough to have cases set in them, so that the students passing in or out may supplement the lecture by personal study of specimens illustrating the subject treated.

The library, just as the lecture theatre, should of course be centrally placed and easy of access. Seeing that the majority of books to be consulted by the medical student are special rather than general works, there need not be those facilities for reference to open shelves which general libraries develop

to the full. The block system of stacking the books together, with bookcases that pull out into the room, should be used for such a library, since it gives central spaces for a student's table as well as allowing the bulky library of a medical school to be in a form in which it can be easily consulted. In the same way the medical museum is not quite on the lines of other museums, since its specimens have constantly to be brought into the lecture theatres and laboratories.

Another special department of the medical school is that which provides the rooms for private research. . . . Now to equip all this experiment there are many special departments that a pathological laboratory must provide—rooms for cultivation, for sterilizing, for distillation, for freezing, for cremation, as well as for photography, glass-blowing, &c. All this bears out my initial-definition, that the basis of the medical school planning lies in the idea of workshops or scientific factories. And in this connection one necessary provision, that of sheds and stables where can be properly housed both the larger and smaller animals necessary for pathological experiment, can be seen to mean a very special contrivance in the planning.

Correspondence.

"The Question of the Moment."

To the Editor of THE BUILDERS' JOURNAL.

SIR,—I was much interested in reading your very sensible and pertinent remarks under the above heading. I am certainly in favour of registration, but not altogether on account of its value in raising the ability of the profession, but because everyday experience convinces me that examination, although to a certain extent beneficial, cannot be relied on as an infallible test of an architect's ability or even of the necessary knowledge of construction. But there is another side of the question which is rarely mentioned—the dignity of the profession. Though a large number of architects are quite beyond suspicion in this matter, can it be denied that there are many who seem to consider it quite compatible with the respect of the profession to tout for patronage, to work for reduced fees or supplant a fellow architect? Here are three of my recent experiences of different members of the profession.

Acting according to the instructions of my client I prepared drawings for the erection of premises, which were passed by the local authority, and then working drawings and specifications. The lowest tender sent in was too high for my client's purse, but no blame could be attached to me, as I had warned my client against this. Acting on further instructions I prepared alternative drawings, &c., and the lowest tender came to practically the amount proposed to be spent. In the meantime my client was "got at" and, as I learned later, another architect was preparing plans for the work shortly before the second set of tenders on mine was received, the result being that my client told me she found herself only able to spend a much smaller amount than she first intended, and that she would not build at all. Yet, a few weeks afterwards she accepted a tender at a much higher figure than that mentioned to me, and my high-principled professional brother was not ignorant of the circumstances, inasmuch as he never furnished the local authority with any plans but took advantage of my having done so. This gentleman is a member of two architectural societies. I wrote to him concerning the matter, and he replied saying he would write later, but he evidently considers discretion the better part of valour, for a year has passed and he is still silent.

Next, I was obliged recently to give final notice to a builder who wanted to shirk his

duty in carrying out a contract in which I was the judge of how the work should be done. This builder went to a professional architect who on all occasions puts six letters after his name, and he, without giving me any notice, examined the building, also my drawings and specification, for the builder, who had to pay him, and in the end to do the work to my satisfaction!

Lastly, a fire of some dimensions recently occurred in the town where I practise, and before the firemen had ceased pouring water on the smouldering embers an architect who is a member of an architectural society in the cause of registration came from a considerable distance and canvassed a client of mine, though he received a straight, if not a favourable, answer.

I have been amused on many occasions at the remark that membership of this and that society is the "hall-mark" of ability, but not a word uttered about the gentlemanly qualities of the architect.—Yours truly, X.

Keystones.

Towards the rebuilding of "Bart's" the City Corporation have voted £2,000 and the Great Western Railway Company £250.

Mr. Harry B. Measures, F.R.I.B.A., the architect of Rowton Houses, has been appointed Director of Barrack Construction.

Aberdare Hall, Cardiff, is to be extended by the erection of a new wing, making an additional frontage to Corbett Road of 28ft. Messrs. Wills & Anderson are the architects.

Stage Furnishing. — The scenes in "Cynthia," at Wyndham's Theatre, have been effectively furnished by Messrs. Oetzmann, of Hampstead Road, W.

Electric Trams at Leicester have been provided at an estimated cost of more than half a million sterling. The overhead system is used. It is proposed to extend the lines into the county.

The Royal Commission on London Street Traffic will reassemble on June 2nd, and will hold only one or two more meetings for the purpose of taking evidence. The Commissioners will then proceed to the consideration of their report.

The Carpenters' Company will entertain the president of the Royal Academy and a number of other artists at dinner on Tuesday, June 21st, at the Hall, London Wall.

A new Church at Seaton Delaval is being built from designs by Mr. C. S. Errington, A.R.I.B.A., of Newcastle. It is to be a red brick Basilican church, in the Early Italian style, with accommodation for 300 people. The estimated cost is £1,700.

A new Rood Screen at Christ Church, Wolverhampton, made of Baltic oak, with ponderous doors stretching from floor to beam, has been erected from designs by Mr. T. H. Fleeming, the architect of the choir. Messrs. H. Wilcock & Co. executed the work, the carving being by Mr. T. Catley, of London.

The Town Wall of Berwick.—As the result of public agitation against a proposal by the Corporation of Berwick-on-Tweed to demolish the ruins of the great Edwardian wall that encompassed the town, in order to erect dwelling-houses, the matter has been taken up by the Secretary of State for War, on whose behalf an inspection will be made.

Hearts of Oak Benefit Society.—On Monday the Lord Mayor laid the foundation stone of the new offices in Euston Road. The site is opposite St. Pancras Church, and the architects (selected in competition) are Messrs. Essex, Nichol & Goodman, of Birmingham, the builder being Mr. Charles Gray Hill, of Coventry and London. The cost of the new offices will be about £44,000, and they are expected to be ready in about twelve months.

Staple Inn — "The Fayrest Inne of Chancery" — was the subject of a paper which Mr. T. Cato Worsfold read before the Topographical Society recently. The name "Staple" was traced to the time when merchant adventurers of the thirteenth century heaped their commodities in the quiet old inn. This explanation, however, was afterwards questioned by the chairman (Mr. H. B. Wheatley), who preferred to attribute the name to the proximity of the old posts of Holborn Bars, which once marked the City's boundary there. The hall is now used by the Institute of Actuaries.

Alterations to the Haymarket Theatre are to be made according to the plans of Mr. C. Stanley Peach, F.R.I.B.A.

The new Queen's Club for Ladies in Edinburgh is approaching completion at the corner of Princes Street and Frederick Street. Messrs. Dunn & Findlay, of Edinburgh, are the architects for the reconstruction, which will cost £9,000.

A new Methodist Church at Leeds, in Ashley Road, Harehills, is to be erected from designs by Mr. H. Ascough Chapman, A.R.I.B.A., architect, of Leeds. There will be seating accommodation for 350 adults. The elevations are fifteenth-century Gothic in style, faced with red pressed bricks and terra-cotta dressings.

New Schools at Harringay have been built at a cost of £39,275. In the higher elementary school there is accommodation for 340 scholars, and in the ordinary elementary school accommodation for 900. Messrs. A. Mitchell & A. M. Butler, of Finsbury Circus, were the architects, and Messrs. McCormick & Son, of Islington, the builders.

The Belfast Municipal Lodging-house in Lower Regent Street has been enlarged by the erection of a wing facing Unity Street, providing sixty-eight additional cubicles; in August, 1902, when originally opened, the accommodation consisted of 100 cubicles, afterwards increased to 150. Mr. James Munce is the architect for the new wing, and Messrs. M'Dowell, Leatham & Fraser are the builders.

Charing Cross Hospital.—The alterations and additions now being carried out will cost about £100,000. The nurses' house has long been finished, but the new surgical block, which embraces six wards, containing ninety beds, two operating theatres, clinical laboratory, and the whole of the new outpatient and casualty departments and dispensary are not expected to be ready before the end of June.

Extensions to the Aberdeen High School for Girls have been made by building a new wing to the south of the old school buildings, connected with the latter by a covered glazed corridor about 80ft. long. A school hall 80ft. by 35ft., which will answer the purpose of a gymnasium, is provided on the ground floor, while on the first floor are a number of science classrooms, with cookery and domestic rooms above. The architect for the extension, which has cost about £9,300, is Mr. J. A. O. Allan.

A Monument at Earlestown is to be erected near the town hall in memory of the men who volunteered from the Newton-in-Makerfield district. The design, by Messrs. Dring & Manchester, architects, Earlestown, was selected in open competition. It is to be executed by Messrs. Stott & Prescott, sculptors, of St. Helens. The memorial will consist of a massive granite base and pedestal in various shades of fine-axed and polished Aberdeen granite, surmounted by a life-size figure of a "man in khaki," executed in white Carrara marble.

At St. Paul's Cathedral the western aisle of the south transept has been converted into the baptistery. The fine bowl of white Sicilian marble which Wren designed for the font has had a rather chequered career. For many years it stood at the west end of the nave, in the second bay on the south side: originally a heavy lid of marble covered the basin, and as there was no apparatus for lifting this, nor any drain in the bowl itself, it was little used. Some years ago it was transferred to the centre of the south-west chapel (commonly known as the Consistory Court), then lately rendered vacant by the removal of the Wellington Monument, whence it has now been taken to its present position in the south transept.



THE BUILDING OF HOYLE'S WAREHOUSE, MANCHESTER (Photograph taken on May 13th).
CHARLES HEATHCOTE AND SONS, ARCHITECTS.

Another week's work on this building shows a great advance in the steelwork and terra-cotta; also the fixing of the floor joists, which is going on systematically throughout.

Builders' Notes.

Messrs. E. F. Blakeley & Co., of Vauxhall Ironworks, Liverpool, have just completed constructional steelwork for generating station and car sheds at Stalybridge, a large contract, and are carrying out similar work at Wakefield.

Change of Address.—Mr. Martin Reece, plastering contractor and artificial stone manufacturer, has removed from 5, Stockwell Crescent, S.W., to 76, Studley Road, Clapham, S.W. The telegraphic address ("Cemented," London) and telephone number (857 Hop) remain as before.

Mr. Howard Colls, the plaintiff in the ancient lights case of *Colls v. The Home and Colonial Stores, Ltd.*, has been presented by the Institute of Builders, of which he is a member, with a silver-gilt Georgian bowl, bearing a suitable inscription, in recognition of the public spirit displayed in contesting the case.

The Building Trade in Canada.—Contracts for the rebuilding of the area destroyed by the Toronto fire are being let rapidly, but some apprehension is expressed as to the possibility of securing the necessary labour. Every urban centre in Canada is confronted with the same problem of insufficient labour for similar work which it is desired to carry out and for which money is available.

L.C.C. Penalty and Bonus Clause.—Nearly every big contract that is now given out by the London County Council contains "the penalty and bonus clause." A certain period is agreed upon for the completion of the work, and it is provided, generally speaking, that a fine of £100 shall be payable for every week's default, and a bonus of £50 for every week to the good.

War Office Proposals.—The War Office contemplate disposing of a large area of land for building purposes in the neighbourhood of Ludgershall, in the hope that the speculating builder will erect villas for married officers and otherwise provide the accommodation of a modern city. A leading firm of land surveyors has been called in to work out the plans of a large building estate, which includes the making of two main roads at a cost of £12,000, and the creation of a water supply and drainage works. Happily for the purpose, a certain big landowner is about to provide a water supply, which will leave the War Department only the sewage works to construct. Altogether the building of Tidworth will be one of the biggest jobs undertaken in this country for some years past, for it practically means the dumping down on Salisbury Plain of a moderate-sized community. It is said to be the idea of the authorities to regulate the building operations in the neighbourhood of the barracks as far as possible, so that the evils which arose in the earlier building works of the sister military town of Aldershot will not be in evidence.

Ventilating Stoves and Grates.—Messrs. Hendry & Pattison, Ltd., heating and ventilating engineers, of London, specialists in warming hospitals, infirmaries, asylums, schools, &c., with the well known D. O. Boyd's patent warm-air ventilating stoves and grates, have recently fitted ward stoves and grates (the former with descending flues) in the New Eastern Hospital, Glasgow, the Dumbarton Hospital and Colinton Mains Hospital, Edinburgh; the David Lewis Hospital, Liverpool; the Horton Epileptic Colony and Manor Asylum, for the London County Council; several large hospitals for the Metropolitan Asylums Board, London; and for the Admiralty stations at home and abroad, besides a large number in isolation and other hospitals and board schools all over the country. The feature of this method of warming is that fresh air from outside is drawn into the ward or room, and

warmed, but not burnt, by contact with the stove; the foul air is thereby expelled through specially constructed ventilators, and the temperature of the room and the volume of air admitted can be easily regulated to suit requirements.

Trade and Craft.

Prismatic Glass.

The prismatic lighting of dark interiors has of recent years received considerable attention, as it mitigates an evil necessarily associated with the crowding into towns and the erection of high buildings. Prismatic glass is a great improvement on the antiquated reflector, which was not only an eyesore, but generally inefficient, and all forms of such glass are to be recommended, though of course some are better than others, the most satisfactory test in commercial use being personal observation of the degree of improved lighting produced by various makers, for as each problem requires separate treatment and the glass needs to be proportioned as it were to the situation, it means that scientific application and intelligent supervision are often better than greater theoretical efficiency. The British Prismatic Light, Ltd., of 34, Victoria Street, London, recognise this and give personal attention to each problem placed before them, only entrusting their business to agents who are competent to use the glass properly, but as their "Maximum Light Glass" (an American invention) at the same time possesses many theoretical advantages, the company have had great success and have acquired an enviable reputation. As regards the theoretical value of this patent form of prismatic glass, the fact that the John Scott Legacy medal of Edinburgh was awarded it testifies to its scientific design. The distinctive feature about "Maximum Light Glass" is that it has a lenticular instead of the usual plane surface (*i.e.*, its front side has a number of rounded ribs or panels, which are virtually lenses). The lense ribs run *transversely* to the direction of the prisms on the inside surface. We would point out what this means.

By way of introduction we may state that the object of all prismatic glass is to gather light impinging in a downward direction at a more or less sharp angle, by reason of the narrowness of streets or courts, and to alter its direction so as to transmit it into the room. This is done by the prisms, the angles of which should be suited to the room so as to throw the light into the furthest corner; but this has led to the erroneous conclusion that as much of the light as possible should be transmitted parallel to the walls, floor and ceiling of the room. The result of such a procedure is that shadows are cast by objects in the room. After the first desideratum has been achieved, namely, that as much extraneous light as possible shall be directed into the interior (and practically all the designs in prismatic glass are equal theoretically in this respect), the next consideration is how to direct it to the best advantage, and, as shadows are most objectionable, to diffuse the light evenly over the room. The way to do this is to transmit the light on divergent lines so as to cause it to strike the bounding walls, ceiling and floor of the apartment and be reflected from them so as to counteract and neutralize the shadows. Glass which is simply prismatic and not lenticular exaggerates the divergency of the transmitted light in the vertical plane only and directs the light in the horizontal plane in parallel lines without diverging it. If lenses are formed on the other (outward) face of the glass running exactly the same way as the prisms the divergency in the vertical plane is increased, but no alteration is caused as regards the horizontal plane. The lenses, however,

have an indirect advantage over the flat surface in that they gather a certain amount of the light which would be lost from the flat surface by total reflection, and they look better than the latter. By running the lenticular panels transversely to the prisms the light is transmitted divergently in both the horizontal and the vertical planes, while additional light is gathered as explained above. In this way practically all shadows are overcome, especially if two windows can be placed in the same apartment, as then the light from one completely overlaps that from the other. This arrangement of lenses and prisms has the advantage also of giving extra strength and allows the larger size of prisms to be readily made, and also the thickness is less compared with other forms, which is an advantage, since there is a loss of light from absorption in every glass. The "Maximum Light Glass" is made in larger sheets than usual, namely, 18in. long by 60in. high, and thus all the many usual joints are avoided. Twenty-one different angles are made, so that the glass may be suited to each particular condition of site and length of apartment. It has truer prisms without so many flaws or roughnesses as are usual in this kind of glass, and as each blemish means loss of efficiency, this is another important point. When the light comes from high up in a narrow court, prismatic glass has generally to be placed outwards from the wall as a canopy, and thus soon gets dirty, besides being ugly and cumbersome. By placing "Maximum Light Glass" with its prisms outward, however, just as much light is gained in the vertical position as by the canopy method with other glasses. Prismatic glass requires very little cleaning because the dust which it collects does not lie on the surfaces that refract the light, and it may be easily cleaned with a brush. The price of the "Maximum" glass is about 1s. 6d. per foot cut to size.

Wind Engines.

Messrs. John S. Millar & Son, of Annan, N.B., the well-known makers of wind engines for pumping water, recently protested against the judges' awards in the competitive trials of such devices which were conducted at Park Royal in 1903, and they have just published the correspondence, &c., in a pamphlet. Any unbiased person reading this must come to the conclusion that the trials were badly managed, unscientific and unfair, and it is most regrettable that the Royal Agricultural Society should have refused to make any correction in their report. Messrs. Millar have the satisfaction of knowing, however, that the report is absolutely discredited, and that instead of any slur being cast on their engines the trials showed their superior efficiency. We may just refer to a few points wherein the report errs. The regulations permitted the entry of such divergent sizes of wind engines as 8ft., 12ft., 16ft., 18ft., 20ft. and 30ft. diameter, and consequently it was quite impossible to make an effective and reliable comparison of the details of construction, strength of material and results obtained as a consequence the engineers conducting the trials virtually eliminated all sizes except the 16ft. diameter wheel. The awards were made to 16ft. engines, though, compared size for size, several of the 12ft. machines showed from 40 to 200 per cent. higher output than the 16ft. engines selected for the final trials. Whilst several of these latter were allowed to repair breakages, 12ft. and other sizes are stated to have been debarred from doing so. The "Ideal" and the "Samson" wind engines made by Messrs. Millar were wrongly stated to have had their wheels buckled, whereas incontestible testimony disproves this statement. The first award was made upon a blunder in a diagram, corrected in later editions of the report without any reference.

Complete List of Contracts Open.

DATE OF DELIVERY		WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
BUILDING:				
May	26	High Bentham, Kendal—Chapel and Schools	Wesleyan Congregation	J. F. Curwen, 26 Highgate, Kendal.
"	26	Bingley, Yorks—School	Grammar School Trust Govrnrs.	W. R. Nunn, Architect, Market Street, Bingley.
"	26	Newburn-on-Tyne—Hospital	Joint Hospital Committee	T. Gregory, Architect, Newburn-on-Tyne.
"	26	Barnsley—Business Premises	—	Crawshaw & Wilkinson, 13 Regent Street, Barnsley.
"	26	Brynmaur, Wales—Villa	W. Jones	W. Jones, Draper, Beaufort Street, Brynmaur, Wales.
"	26	Cleator Moor—Villa	F. Atkinson	F. Atkinson, 77 Main Street, Cleator.
"	26	Hull—Abutments	Corporation	A. E. White, Engineer, Town Hall, Hull.
"	26	Pengam, Wales—Thirty or more Houses	Glan-y-nant Building Club	P. V. Jones, Architect and Surveyor, Hengoed.
"	26	Rotherham—Two Houses	—	R. Watson, "Morton," Gerrard Road, Rotherham.
"	27	Buckle, Scotland—Building	Ruthven School Board	J. D. Macdonald, Clerk, School Board, Ruthven.
"	27	Udny, Scotland—Alterations	—	W. Davidson, Architect, Ellon.
"	27	Dromara, Ireland—Residence	Rural District Council	Parochial House, Finnis, Dromara.
"	28	Thirsk—Isolation Hospital	J. G. M'Keever	C. McC. Swarbrick, Clerk, Thirsk.
"	28	Ardee, Ireland—Residence	Building Committee	F. Snaw, 36 South Frederick Street, Dublin.
"	28	Belfast—Hall	G. Wood	D. Coote, 6 Lewis Road, Belfast.
"	28	Fulford, York—Ten Houses	—	A. H. Everist, 8 New Street, York.
"	28	Rogerston, Wales—Four Houses	Urban District Council	J. Emlyn, The Siding, Rogerston.
"	28	Radcliffe, Lancs—Four Shops with Arcade	J. R. & T. A. Webb	Engineer to the Council, Radcliffe, Lancs.
"	28	Ferndale, Wales—Alterations	Dr. J. Thomas	R. S. Griffiths, Architect and Surveyor, Tonypandy.
"	28	Abertillery, Wales—Alterations	—	R. L. Roberts, Architect, Abercarn.
"	30	Aberbargoed, Wales—House	Markets Committee	G. Kunshole, Architect and Surveyor, Station Road, Bargoed.
"	30	Guildford—Mortuary	Corporation	C. G. Mason, Borough Surveyor, Tuns Gate.
"	30	Leicester—New Floor and Drainage	Town Council	E. G. Mawbey, Borough Engineer, Town Hall, Leicester.
"	30	Rotherham—Alterations	—	J. Platts, Architect, Rotherham.
"	30	Taunton—Alterations and Additions	—	Borough Surveyor, Taunton.
"	30	St. Tudy, Cornwall—Two Cottages	A. Miles	Sir W. Onslow, Bart., Tretheweys, Tregarrick.
"	30	Bridgend—Residence	Education Committee	P. J. Thomas, Architect, Bridgend.
"	30	Abbey Hey—Offices, &c.	—	J. W. Willes, Surveyor, Town Hall, Gorton.
"	30	Wiltshire, Blackburn—Girls' Orphanage	Harbour Commissioners	Briggs & Wolstenholme, Richmond Terrace, Blackburn.
"	30	Belfast—Timber Wharf	Joint Hospital Board	G. F. L. Giles, Harbour Engineer, Belfast.
"	31	Biggleswade—Enlargement of Hospital	Commissioners of H.M. Works, &c.	H. Young Architect, Maitland Street, Midland Road, Bedford.
"	31	Cheltenham—Enlargement of Post-Office	Commissioners of H.M. Works, &c.	Secretary, H.M. Office of Works, &c., Storey's Gate, London, S.W.
"	31	Barnet—Post-Office	—	J. Wager, H.M. Office of Works, Storey's Gate, London, S.W.
"	31	Abercarn, Wales—Chapel	—	C. M. Davies, 112 High Street, Merthyr.
"	31	Consett, Durham—Twenty Cottages	Consett Iron Co., Ltd.	C. E. Oliver, Consett Iron Co., Ltd., Consett, Durham.
"	31	London, W.C.—Casual Wards, &c.	Strand Union Guardians	A. A. Kekwich, 18 Outer Temple, Strand, W.C.
"	31	Sheffield—Tar Macadam Shed	Corporation	C. F. Wike, Surveyor, Town Hall, Sheffield.
"	31	Whitchurch, Hants—School	—	A. Kercher, Springfield Villas, Whitchurch, Hants.
"	31	Stithians—Six Pews	—	W. H. Gluyas, Methodist Free Church, Stithians, Berranwell, R.S.O.
June	1	London, S.E.—Brick Graves and Vaults, &c.	London County Council	E. Wright, Town Clerk, Lewisham Town Hall, Catford, S.E.
"	1	Belfast—Buildings	Directors, Scottish Temperance Life Assurance Co., Ltd.	S. C. Hunter, Surveyor, Wellington Place, Belfast.
"	1	Bridgwater—Boiler-house, &c.	Gas Light Co.	Bridgwater Gas Light Co., Bridgwater.
"	1	London, N.—Verandah	St. Leonard Gurdns., Shoreditch	F. J. Smith, Architect, Parliament Mansions, Victoria Street, S.W.
"	1	London, S.W.—Extension of Town Hall	Fulham Borough Council	F. Wood, Borough Surveyor, Fulham
"	1	Priddy—New Chapel and Sacristies	Rev. Dr. O'Neill	A. Bruns, 1 College Street, Dublin.
"	1	Alderly Steeple, Northallerton, Yorks—Boundary Wall	Corporation	Churchwardens, Alderly Steeple Vicarage, Northallerton, Yorks.
"	1	Rawtenstall, Lancs—Library	Penrhyber Navigation Colliery Co., Ltd.	J. Johnson, Borough Surveyor, Municipal Offices, Rawtenstall.
"	2	Penrhywceiber, Wales—Lime and Cement	—	Secretary, Company's Offices, Penrhywceiber, R.S.O., Glam.
"	3	Muker, near Richmond, Yorks—Bridge	Reeth Rural District Council	T. Brown, Surveyor, Low Row, Richmond, Yorks.
"	3	Gloucester—Workshops, &c.	Gaslight Co.	W. B. Wood, Architect, Gloucester.
"	4	Cockermouth—Villa	—	J. Flemings, 2 Corn Market, Cockermouth.
"	4	Welwyn, Herts—Mortuary, &c.	Guardians	Workhouse, Welwyn.
"	4	Teddington—Public Library	Urban District Council	H. A. Cheers, 35 Waldegrave Park, Twickenham.
"	6	Papsbury, near St. Albans—Alterations	Visiting Committee	Young & Brown, 104 High Holborn, W.C.
"	6	Sedgley—Repairs, &c.	Staffordshire C.C. Education Committee	T. J. Howitt, Queen Victoria Schools, Sedgley.
"	6	St. Abbs, Scotland—House	—	E. K. Carmichael, Architect, 14 Queen Street, Edinburgh.
"	7	Mountain Ash, Wales—Alterations, &c.	Education Committee	A. O. Evans, Architect and Surveyor, Post Office Chambers Pontypridd.
"	9	Leicester—Pumping Station	Sewage Works and Farms Committee	E. G. Mawbey, Borough Engineer, Town Hall, Leicester.
"	9	Penzance—Hospital and Dispensary	—	O. Caldwell, Architect, Victoria Square, Penzance.
"	14	London, S.W.—Balcony Dwellings	London County Council	Architect's Dept. (Housing Section), 19 Charing Cross Road, W.C.
July	23	Rio-de-Janeiro—Theatre	—	Commercial Intell. Branch, Board of Trade, 50 Parliament St., S.W.
ENGINEERING:				
May	26	London, N.E.—Electricity-Supply Mains	Hackney Borough Council	R. Hammond, 64 Victoria Street, Westminster, S.W.
"	27	Pontefract—Waterworks	Rural District Council	J. Waugh, Engineer, Sunbridge Chambers, Bradford.
"	27	Sunderland—Generator	Corporation	J. F. C. Snell, Engineer, Town Hall, Sunderland.
"	27	Warminster—Gas Mains	—	Gas Company, Warminster.
"	28	Kilmarnock—Electric Plant	Corporation	Kennedy & Jenkin, 17 Victoria Street, Westminster.
"	28	Royton, near Oldham—Overhead Equipment	—	R. P. Wilson, 66 Victoria Street, Westminster.
"	30	London, N.—Electric Plant	Hornsey Town Council	R. Hammond, 64 Victoria Street, Westminster.
"	30	London, S.W.—Fire-Alarm System	Guardians	E. J. Mott, Clerk, Fulham Palace Road, Hammersmith, W.
"	30	London, S.W.—Pumps	London County Council	Clerk to the Council, County Hall, Spring Gardens, S.W.
"	30	Stirling—Drainage Works	County Council	Warren & Stuart, 94 Hope Street, Glasgow.
"	30	Newton Abbot—Concrete Culvert, Arch and Culvert	Urban District Council	J. Chudleigh, Architect, Newton Abbot.
"	31	Rotherham—Cable, &c.	Corporation	Borough Electrical Engineer, Rotherham.
"	31	Mexborough—Electric Plant	Urban District Council	Consulting Engineer, Electricity Works, Mexborough.
June	1	Plymouth—Heating Apparatus	Education Committee	H. J. Snell, 11 The Crescent, Plymouth.
"	1	Canterbury—Electrical Plant	Lighting Committee	R. Hammond, 64 Victoria Street, Westminster, S.W.
"	1	London, E.C.—Engines and Tenders	East Indian Railway Co.	C. W. Young, Secretary Nicholas Lane, E.C.
"	2	Penrhywceiber, Wales—Electric Lamps and Fittings	Penrhyber Navigation Colliery Co., Ltd.	Secretary, Company's Offices, Penrhywceiber, R.S.O., Glam.
"	3	Rochester—Electric Tramway	Corporation	E. Rotter, Engineer, 47 Victoria Street, Westminster, S.W.
"	3	Pontypridd—Motors	Urban District Council	R. P. Wilson, 66 Victoria Street, Westminster, S.W.
"	6	Sheffield—Gasholder	United Gaslight Co.	J. W. Morrison, Company's Engineer, Commercial St., Sheffield.
"	7	Bury—Heating	Tramways Committee	A. W. Bradley, Borough Engineer and Surveyor, Bury.
"	7	Carlisle—Waterworks	Corporation	J. Mansergh & Sons, 5 Victoria Street, Westminster, S.W.
"	7	London, S.W.—Repairing Bridge	London County Council	Engineer's Department, County Hall, Spring Gardens, S.W.
"	7	North Shields—Culvert	Corporation	J. F. Smillie, Borough Surveyor, Tynemouth.
"	9	Exeter—Tramways	Corporation	J. E. Waller, 29 Great George Street, Westminster.
"	10	Ryde, Isle of Wight—Reconstruction of Pier	Pier Committee	T. R. Saunders, Belgrave Chambers, Ventnor.
"	14	London, S.W.—Coal and Ash Conveyors	London County Council	Clerk to the Council, County Hall, Spring Gardens, S.W.
July	4	Johannesburg—Cables, &c.	Municipal Tramways & Electric Supply	Nordey & Dawbarn, 82 Victoria Street, S.W.
IRON AND STEEL:				
May	27	Darwen, Lancs—Mains, Tubes, &c.	Gas Committee	A. H. Smith, Gas Engineer, Darwen.
"	31	Nelson, Lancs—Pipes	Water Committee	J. Hartley, Town Hall, Nelson.
June	2	Penrhywceiber, Wales—Stores	Penrhyber Navigation Colliery Co., Ltd.	Secretary, Company's Offices, Penrhywceiber, R.S.O., Glam.
"	6	Pontypridd—Stores	Gas Committee	E. Jones, Gas Engineer, Gasworks, Trefores, near Pontypridd.
"	6	Southampton—Rails	Corporation	J. A. Crowther, Engineer, Municipal Offices, Southampton.
PAINTING AND PLUMBING:				
May	21	Selby—Painting	Burial Board	E. Townsend, Clerk, Abbey Place, Selby.
"	26	London, S.W.—Painting, &c.	Wandsworth Guardians	F. W. Piper, Clerk, Union Offices, St. John's Hill, S.W.
"	27	Dartford, Kent—Painting, &c., at Asylum	Metropolitan Asylums Board	T. D. Mann, Clerk, Board's Offices, Embankment, E.C.
"	27	York—Painting, &c., at Barracks	War Department	E. H. Bethell, Colonel, Commanding R.E., York Sub-District, York.
"	30	Southall—Painting, &c., at School	St. Marylebone Guardians	Superintendent, St. Marylebone Guardians' Schools, Southall.
"	30	Guildford—Painting	Town Council	C. G. Mason, Surveyor, Tuns Gate, Guildford.

Complete List of Contracts Open - continued.

DATE OF DELIVERY.	WORK TO BE EXECUTED	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
PAINTING AND PLUMBING—cont.			
May 31	Driffield, &c., Yorks—Painting	Standing Joint Committee ..	County Surveyor, Beverley.
" 31	London, W.C.—Limewhiting	Bloomsbury Guardians	J. Appleton, Clerk, 57 Broad Street, W.C.
June 2	Penrhiwceiber, Wales—Paints. &c. .. .	Penrhykyber Navigation Colliery Co., Ltd.	Secretary, Company's Offices, Penrhiwceiber, R.S.O., Glam.
" 3	Bootle, Lancs—Painting	Corporation	Borough Engineer's Office, Town Hall, Bootle.
" 6	Pontypridd—Lead and Compo, &c. .. .	Gas Committee	E. Jones, Gas Engineer, Gasworks, Treforest, near Pontypridd
ROADS AND CARTAGE:			
May 26	Feltham—Granite	Urban District Council	G. W. Manning, Surveyor's Office, Feltham.
" 27	Wilmslow—Materials	Urban District Council	A. S. Cartwright, Council Offices, Wilmslow.
" 27	London, N.—Kerbing, &c.	Urban District Council	— Keynolds, Surveyor, Council Chambers, Beaconsfield Road, Friern Barnet, N.
" 27	Ashford, Kent—Granite	Urban District Council	W. Terrill, Surveyor, North Street, Ashford, Kent.
" 28	Hampstead, N.W.—Wood Paving	Borough Council	O. E. Winter, Engineer, Town Hall, Haverstock Hill, N.W.
" 28	Hadleigh, Suffolk—Granite	Urban District Council	C. J. Grimwade, Council Offices, Hadleigh, Suffolk.
" 28	Snaygill, Skipton—Road Improvements ..	Urban District Council	M. R. Knowles, Solicitor, Skipton.
" 30	London, N.—Road Work	Hornsey Borough Council	E. J. Lovegrove, Municipal Offices, Southwood Lane, Highgate.
" 30	Clayton le-Moors, Lancs—Paving, &c. ..	Urban District Council	A. Dodgeon, Surveyor, Clayton-le-Moors.
" 30	London, N.—Making-up	Finchley Urban District Council	Surveyor, Council Offices, Church End, Finchley.
" 30	New Malden Surrey—Tar Paving	Urban District Council	District Surveyor, Cambridge Road, New Malden.
" 30	Witham, Essex—Granite	Urban District Council	W. B. Blood, Clerk, Witham, Essex.
" 31	Farnham—Street Works	Urban District Council	R. W. Cass, Surveyor, Council Offices, South Street, Farnham.
" 31	London, W.—Making-up	Acton District Council	District Council Offices, 57 High Street, Acton.
" 31	Maldon—Granite and Flints	Corporation	T. R. Swales, Surveyor, Municipal Offices, Maldon, Essex.
" 31	Sefton, Liverpool—Materials, &c.	Rural District Council	J. Roscoe, Surveyor, Kirkby, near Liverpool.
" 31	West Hartlepool—Streets	Corporation	P. F. Dennis, Borough Engineer, West Hartlepool.
" 31	Windsor—Making-up, &c.	Town Council	Borough Surveyor, Alma Road, Windsor.
June 1	Portmadoc, Merioneth—Road Repair, &c. .	County Council	E. Vaughton, County Agent, Arthog, Dolgelly.
" 1	Enfield—Granite	Urban District Council	R. Collins, Surveyor, Public Offices, Enfield.
" 1	Littlehampton—Paving Works	Urban District Council	H. Howard, Town Offices, Littlehampton.
" 1	Petersfield—Paving, &c.	Urban District Council	H. T. Keates, Town Surveyor, Petersfield.
" 6	Leeds—Road Materials	Rural District Council	J. H. Ford, Poor Law Offices, Leeds.
" 7	London, N.—Making-up	Tottenham R.D.C.	W. H. Prescott, Engineer, 712 High Road, Tottenham.
" 7	Thames Ditton—Road Making	Urban District Council	A. J. Henderson, Engineer and Surveyor, Thames Ditton.
SANITARY:			
May 26	Uxbridge—Sewers, &c.	Rural District Council	J. F. Stow, Engineer, Corn Exchange, Uxbridge.
" 26	Mapplewell, Yorks—Sewer	Urban District Council	S. Wilkinson, Surveyor, Council Offices, Mapplewell.
" 28	Walsall—Lime	Corporation	J. R. Cooper, Town Clerk, Borough Offices, Walsall.
" 28	Haworth, Yorks—Sewage Works	Urban District Council	W. B. Woodhead & Son, 18 Exchange, Bradford.
" 28	Perth—Sewers	Town Council	R. M. Killop, 12 Tay Street, Perth.
" 30	Southwick, Sussex—Extension of Sewer ..	Urban District Council	G. W. Wear, Surveyor, Southwick.
June 4	Brandon Colliery and Littleburn, Durham—Sewer	Urban District Council	J. E. Parker, Engineer, Post Office Chambers, Newcastle-on-Tyne.
" 6	Pontypridd—Lime	Gas Committee	E. Jones, Gas Engineer, Gasworks, Treforest, near Pontypridd.
TIMBER:			
May 28	Walsall—Creosote	Corporation	J. R. Cooper, Town Clerk, Borough Offices, Walsall.
" 30	Lowestoft—Timber Groynes	Town Council	G. H. Hamby, Borough Engineer, Town Hall, Lowestoft.
June 2	Penrhiwceiber—Timber	Penrhykyber Navigation Colliery Co., Ltd.	Secretary, Company's Offices, Penrhiwceiber, R.S.O., Glam.
" 4	South Hetton, Sunderland—Timber	Coal Co.	J. R. Lambert, South Hetton, Sunderland.
" 6	Ventnor, Isle of Wight—Groyne	Urban District Council	E. J. Harvey, Surveyor to the Council, Town Hall, Ventnor.

List of Competitions Open.

DATE OF DELIVERY.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	DEPOSIT REQUIRED FOR CONDITIONS, &c.	FROM WHOM PARTICULARS MAY BE OBTAINED.
May 31	Stamford, Lincs—Public Library	£25, £15, £10.	£1 is.	C. Atter, Town Clerk, Town Hall, Stamford.
" 31	New Somerby, Grantham—Church	£10	—	Rev. H. H. Surgey, Dudley Road, Grantham.
" 31	Grantham—Church	£10.	—	H. H. Surgey, Dudley Road, Grantham.
" 31	Liverpool—Church	—	—	Hon. Secretary, 7 Chevin Road, Liverpool.
June 30	Peterborough—Library	£50, £25, £15.	£1	W. Mellows, Town Clerk, Peterborough.
July 2	Bury St. Edmunds—Alterations to Shire Hall	£50, £30, £20.	£1	A. A. Hunt, County Architect, Sudbury, Suffolk.

Tenders.

Information from accredited sources should be sent to "The Editor" at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Addressed postcards on which lists of tenders may be stated will be sent post free on application to the Manager, BUILDERS' JOURNAL, 6, Great New Street, Fetter Lane, E.C.

Crabbs Cross (near Redditch).—For the erection of new grocery, drapery and butcher's shops, with house, &c., at Crabbs Cross, near Redditch, for the Alcester Co-operative Industrial Society, Ltd. Mr. J. W. Adams, architect, Hay Mills, Birmingham:—

G. Huins & Son	£1,638
W. H. Gibbs, King's Heath, Birmingham ..	1,575
E. Giles & Son, Cherrywood Road, Bordesley, Birmingham	1,497
H. Surman	1,475
C. G. Huins & Sons	1,460
T. Yeomans	1,450
G. Huxley,* Astwood Bank	1,397

[Rest of Redditch.]
* Provisionally accepted.

Holyhead.—For the erection of a school to accommodate in three departments 900 children, and also a master's house, for the Holyhead School Board:—

E. Jones & Son, Plasdolwydd, Gresolton, R.S.O.	£13,680
G. Roberts, Llandudno	11,255
W. Williams & Son,* Tanrefail, Holyhead ..	10,985
Thomas & Jones, Llanerchymedd	9,900
H. & I. Williams, Llanrhyddlad, Valley, R.S.O.	9,681
R. Jones, Twrog Mills, Llanwnda, near Carnarvon	9,420
R. & I. Williams, Upper Bangor	9,173

* Accepted.

Hounslow.—For the erection of stores, stables and foreman's cottages on the Pear Tree Estate, for the Heston and Isleworth Urban District Council. Mr. P. G. Parkman, A.M.I.C.E., engineer and surveyor:—

Crabb & Son, Brixton	£5,250 0 0
T. Hiscock	4,880 0 0
Foster Brothers, Norwood	4,837 10 0
W. Irwin, Islington	4,820 0 0
C. Emmett	4,819 15 2
Danels & Son	4,750 0 0
W. Hogben	4,712 0 0
W. Wallis, Balham	4,683 13 0
Leslie & Co., Ltd., Kensington	4,648 0 0
Hughes & Stirling, London	4,563 0 0
Dorey & Co., Ltd., Brentford	4,500 0 0
Wisdom Brothers, Isleworth	4,417 0 0
H. Kent, Lewisham	4,394 0 0
C. Gray,* Shepherd's Bush	4,393 0 0

* Accepted. [Rest of Hounslow.]

Ipswich.—For house, shop and printing works, St. Peter's Street, for Mr. T. G. Garrod. Mr. J. A. Scheuermann, architect, 23, High Street, Ipswich. Quantities by Mr. J. S. Parmenter, Ipswich:—

W. Grayston	£1,613
V. A. Marriott	1,595
G. Kenney	1,563
C. Green	1,510
M. Death	1,494
H. J. Winzell	1,487
S. Kenney	1,485
R. Girling	1,485
W. H. Death	1,475
Scales & Robins	1,469
A. Sadler	1,420
G. Grimwood & Sons,* Ipswich	1,333

* Accepted.

Liverpool.—For proposed additions to premises, Seel Street and Fleet Street, Liverpool, for Messrs. Thomas Ashcroft, jun., & Son. Mr. J. H. Havelock-Sutton, architect, 101, Dale Street, Liverpool. Quantities by the architect:—

Caldecott & Co.	£2,842
Brown & Backhouse	2,700
W. Hall & Son, Ltd.	2,699
J. W. Weeks & Son	2,625
W. Tomkinson & Sons	2,569
P. Tyson	2,519
J. Henshaw & Sons	2,479
F. W. Mayor & Co., Ltd.	2,475
W. Thornton & Sons	2,370
Holme & Green	2,369
J. Paterson & Son	2,319
J. & G. Chappell,* Walton	2,264

* Accepted.

Longleat House (near Warminster).—For reservoir, &c., for Longleat House (fire protection). Messrs. Willcox & Raikes, engineers, 63, Temple Row, Birmingham:—

Hodder & Son, Froime	£2,100 0 0
T. Lydford, Castle Carey	1,978 14 0
S. Ambrose, Bath	1,890 6 0
W. Hancock, Bristol	1,883 16 0
Jenkins & Sons, Leamington	1,853 0 0
A. Wills & Sons, Bath	1,839 0 0
J. Riley, Cheltenham	1,834 0 0
T. Vale & Sons, Stourport	1,830 0 0
W. S. Busnell, Mill Hill, N.W.	1,810 0 0
Rowell & Son, Chipping Norton	1,691 1 3
R. Butcher & Son, Warminster	1,585 17 0
Davies, Ball & Co., Kent	1,560 0 0
H. Franklin, Warminster	1,533 14 6
W. Westward, Bromyard	1,473 11 8
J. Byard & Son, Gloucester	1,440 0 0
Smith & Marchant, Shepton Mallet	1,425 0 0
J. Bird, Radstock	1,340 0 0
A. L. Ponton, Warminster	1,325 6 1
Tryhorn & Son, Salisbury	1,315 0 0
Rogers & Wood,* London, S.E.	1,297 16 1
W. E. Bennett, Salcombe	1,230 0 0

* Accepted.

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A YOUTH, fond of drawing and passed London Metric in arithmetic, algebra, and geometry, seeks **CLERKSHIP** in Architect. Surveyor's, or Builder's office.—A. G., "Wilton," Hamilton Road, Sidecup. 383

AN ARCHITECT is prepared to get out practical Artistic Designs and Working Drawings and details for moderate inclusive fee. Approval in pencil.—DAWES, 24, Charles Road, St. Leonards. 398

AN ARCHITECT with spare time is willing to render assistance in his own office in the preparation of perspectives, designs, working drawings, quantities, &c.—CHAS. CARTER, M.S.A., Sherwood Lodge, Nottingham. 386

AN IMPROVER in the Building Trade seeks situation as time-keeper, or to assist in joiner's shop. Early riser. Good references.—Address G. P., Wingland Grange, King's Lynn. 382

ARCHITECT and SURVEYOR'S ASSISTANT desires RE-ENGAGEMENT. Isolation hospital work, working drawings, details, quantities, surveys, &c. Good testimonials. Moderate salary.—Box 351, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C. 391

ARCHITECT and SURVEYOR'S ASSISTANT desires RE-ENGAGEMENT. Seven years' experience. Excellent references. Good knowledge of quantities and specifications. Salary £2.—H. P. S., 76, Tremadoc Road, Clapham, S.W. 397

ARCHITECT and SURVEYOR'S EXPERIENCED ASSISTANT, age 25, over nine years in good offices, desires RE-ENGAGEMENT. Thorough good all-round man. Excellent testimonials.—Uno., The Close, Grassmoor, Chesterfield. 377

ARCHITECT & SURVEYOR'S JUNIOR, 7 years' experience; can take levels, surveys, take off quantities, working drawings, and details.—Box 388, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

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ARCHITECT, SURVEYOR & ESTATE AGENT'S ASSISTANT, M.S.A., age 26. Experience 10 years, working and detail drawings, specifications, quantities, surveying and levelling; wants position in large country Estate Office; or chief assistant with view to permanency. Reference first class. salary 50/- per week.—ALEXANDER DRAKE ALLEN, Moss Vicarage, Doncaster. 392

ASSISTANT BUILDING SURVEYOR and ARCHITECT, passed P.A.S.I., DESIRES CHANGE; eight years' good experience; excellent draughtsman; accurate surveyor and leveller; specifications, quantities, &c.; excellent testimonials; municipal preferred.—Box 396, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

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BRICKWORK, Pointing and Gauge Work wanted by experienced man. Contract or Speculation. Good reference.—X. Y. Z., 133, Derby Road, Seven Kings, Ilford. 370

BUILDER'S ASSISTANT. Ten years' experience. Abstracting and billing up quantities. Contract and jobbing, prime costs, accounts, checking invoices, ledgers, and all other office routine, also several years of outside supervision. Excellent references. Age 27.—FRANCIS, 2, Kennington Park Road. 366

BUILDER'S JUNIOR CLERK or ASSISTANT. Position wanted as above by young gentleman. Preferable outside jobbing supervision, measuring, &c. Accustomed to usual office routine, tracing, &c. Age 21. Experience chief object.—Box 390, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

CARPENTER and JOINER, age 22, eight years' experience, desires CONSTANCY, country preferred.—H. G. C., 20, Woodhouse Grove, East Ham. 401

CARPENTER and JOINER (Good), Factory, Estate, or otherwise.—W. W., 19, Brunswick Avenue, New Southgate, N. 364

CLERK OF WORKS desires an appointment. Age 36. Total abstainer. Able to prepare details, plans, specifications, quantities, surveys, levels, highest references.—Apply Box 395, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

DRAUGHTSMAN, &c. (22), disengaged, 6 years' experience working drawings, details, ornamental lettering &c., typewriting, good refs.—C. S. H., 176, Beaver Road, South Ashford, Kent. 385

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ESTIMATOR (successful) desires Engagement. Quantities, measuring up, adjusting accounts, plans, specifications, valuations, or would undertake temporary work for Builders. Highest references.—MARTIN, 262, Amburst Road, Stoke Newington. 379

GENERAL FOREMAN seeks RE-ENGAGEMENT. Good manager of men. Bricklayer by trade. Good references from last and previous employers.—Address A. G., 58, Strone Road, Forest Gate, E. 349

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GILDER, Practical Worker and Estimator seeks RE-ENGAGEMENT as FOREMAN; 16 years' reference.—J. L., 291, New North Road, Islington, N. 399

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BUILDER'S ASSISTANT WANTED for Camden Town office. Must have several years' experience, able to keep prime cost, book up materials and plant, write up contract and jobbing accounts and general routine. State age, salary, experience, and where last employed.—Box 389, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

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ACCOUNTANTS and BOOKKEEPERS to BUILDERS and CONTRACTORS.—Trading and Profit and Loss Accounts, Balance Sheets, Prime Cost Accounts, Books opened, investigated, and written up.—Write to MILNE & Co., 46, Milman Road, Queen's Park, W.

CLINKER FOR SALE, washed and graded for Bacteria Beds; any quantity; about 1s. 8d. per cubic yard. Large stocks on hand. Also slag and concrete goods.—Apply WAKE & HOLLIS, LTD., Collingwood Buildings, Newcastle-on-Tyne.

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Premiums of £50, £30, and £20 are offered for the three best sets of Designs.

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The prelated Designs will become the absolute property of the Committee.

Designs to be delivered on or before the 2nd day of JULY, 1904. The County Architect will act as assessor.

A. AINSWORTH HUNT,

Sudbury, Suffolk. County Architect.

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Contracts Open.

E.  R.

WAR DEPARTMENT CONTRACTS at LEICESTER BARRACKS and STRENSALL CAMP.

NOTICE TO BUILDERS.

TENDERS are required for the External and Internal PAINTING, &c., and WORKS in connection therewith, at Leicester Regimental Depot and Strensall Camp, near York.

Parties desiring to Tender must leave their names at the Royal Engineer Office, Fishergate, York, on or before FRIDAY, the 27th inst., and pay the sum of Ten Shillings (10s. 0d.) for the Bill of Quantities, which, with the Form of Tender, will be issued to each person applying, for each Station.

E. H. BETHELL, Colonel,
Commanding Royal Engineers,
York Sub-District.

May, 1904.

E.  R.

WAR DEPARTMENT CONTRACT FOR REPAIRS AND MATERIALS.

TENDERS for the above, during the period 1st JULY, 1904, to 31st MARCH, 1906, are required for the under-mentioned portion of the "Home" Royal Engineer District.

CONTRACT No. 2.—CATERHAM, CROYDON, AND MOBILIZATION CENTRES.

Forms of Tender, Conditions of Contract, and all necessary information may be obtained on application at the Royal Engineer Office, 41, Charing Cross, London, S.W., between the hours of 11 a.m. and 3 p.m. on any week day, except Saturday, up to the 1st June, 1904. Application may be made by letter addressed to the Commanding Royal Engineer, Home District, or in person.

Tenders are to be forwarded to the Director of Army Contracts, War Office, Pall Mall, London, S.W., not later than MONDAY, 13th June, 1904.

M. ST. L. SIMON, Lieut. R.E.,

Staff Officer to

Commanding Royal Engineer,
Home District.

19th May 1904.

COUNTY BOROUGH OF BURY. HEATING OF TRAMWAY DEPÔT.

The Tramways Committee are prepared to receive Schemes and TENDERS for the HEATING required at the CAR DEPÔT, Rochdale Road, Bury. Particulars may be obtained on application to Mr. ARTHUR W. BRADLEY, Assoc. M.Inst.C.E., Borough Engineer and Surveyor, Bury, on payment of a deposit of £1, which will be returned on receipt of a bona-fide tender.

Sealed tenders, endorsed "Tender for Heating, Car DEPÔT," must be delivered at my office not later than the 7th day of JUNE, 1904.

JOHN HASLAM,

Municipal Offices, Bury,
7th May, 1904. Town Clerk,

COUNTY COUNCIL OF MIDDLESEX. HAPSBUARY ASYLUM, NEAR ST. ALBANS, HERTS.

TO BUILDERS AND CONTRACTORS.

The Visiting Committee of the above Asylum invite TENDERS for ALTERATIONS to the existing Farm Buildings, and the CONSTRUCTION of additional Farm Buildings, consisting of Cow Loose Boxes, Cow Houses, Dairy, Slaughter-house, Sick Loose Box, Poultry House, Cottages, Piggeries, Stable, &c.

Bills of Quantities are being prepared by Messrs. YOUNG & BROWN, 104, High Holborn, London, W.C.

Contractors willing to tender for the work must send in their names to the Clerk of the Committee, together with a statement of the work which they have executed, and a deposit of £5 5s., on or before the 19th MAY, 1904. The Bills of Quantities will then be forwarded in due course.

The Tenders must be delivered to the Clerk not later than Noon, on the 6th JUNE, 1904, and must be marked "Tender for Farm Buildings, &c., Hapsbury." The amount of the deposit will be returned to persons who have sent in bona-fide tenders.

The Committee do not bind themselves to accept the lowest or any tender.

WALTER GEO. AUSTIN,

Clerk of the Visiting Committee.

Guildhall, Westminster, S.W.,
10th May, 1904.

Property & Land Sales.

The charge for Advertisements under this heading is 2s. per insertion not exceeding four lines, and 6d. per line after.

BERKS and SURREY (borders).

Under 1½ mile of Sunningdale Station, L. and S. W. Ry. FREEHOLD RESIDENTIAL PROPERTY.

HAMPTON AND SONS are favoured with instructions from the Trustees of the late J. GILLHAM, Esq., to SELL by AUCTION, at the Mart, E.C., on FRIDAY, JUNE 10, at 2 o'clock precisely (unless previously disposed of by private treaty), the very choice Freehold Property, known as

HATTON HALL, Windlesham, occupying a charming position with rural surroundings and in the centre of a first-rate residential and sporting district.

Within easy drives of Ascot Racecourse and Windsor Park.

The admirably planned residence was substantially built about 30 years ago for owner's occupation. Stands high on dry soil. Near favourite golf course. Approached from lodge entrance.

Stabling, gardener's house, laundry, small house and garden, productive walled kitchen garden, well wooded pleasure grounds, orchard, and park-like and well-watered meadow land, in all about

42 ACRES.

Extensive road frontages and charming Building sites. Particulars and Conditions of Sale of Messrs. LINDSAY, GREENFIELD, and MASON, Solicitors, 11, Ironmonger Lane, E.C., and 6, Albion Road, Sutton, Surrey; of R. P. WILLIAMS, Esq., Solicitor, 51, Dock Street, Newport, Mon.; and of HAMPTON AND SONS, Auctioneers, Nos. 2 and 3, Cockspur Street, S.W.

STAMFORD HILL.—Valuable Freehold Building Estate, with nearly 700 feet frontage to the main road, pleasantly situated on high ground, near Clapton Common, close to tramway, near the Stamford Hill and South Tottenham Station, and within 4½ miles of the Bank of England, ripe for immediate building operations and the creation of ground rents. The estate comprises an area of ca. 2r. 25p. situated without the London County Council area, and includes, in addition to the fine old residence, known as "The Newsams" (in hand), with gate-keeper's lodge and stabling, four houses let on short tenancies at rents amounting in all to about £200 per annum. Vacant possession of the greater portion of the property can be given on completion of the purchase, thus enabling a purchaser at once to proceed with the development of the estate.

MESSRS. BEADEL, WOOD & Co. are instructed to SELL by AUCTION, at the Mart, Tokenhouse Yard, London, E.C., on Thursday, 16th June, 1904, at 1 o'clock precisely, the above valuable FREEHOLD BUILDING ESTATE, unless previously disposed of by private treaty. Particulars, with Plan and Conditions of Sale, may be obtained of Messrs. Broughton, Nocton, and Broughton, Solicitors, 12, Great Marlborough Street, W., at the Mart; and of Messrs. Beadel, Wood & Co., 97, Gresham Street, London, E.C.

SURREY HILLS.—Upset prices £40 and £80 per plot, re Alfred Brook, Esq., deceased.—FREEHOLD BUILDING LAND, three plots of 50 ft. and three of 100 ft., frontages to Butlers Dean Road, Woldingham, depths 213 ft. to 365 ft. Charming residential sites. In two or six lots. Solicitors, Messrs. Bevan and King, 40, Chancery Lane, W.C.

MESSRS. DUNCAN & KIMPTON are instructed to SELL the above by AUCTION at the MART, Tokenhouse Yard, E.C., on TUESDAY, MAY 31st, at TWO o'clock precisely, in two or six lots.

Particulars, etc., of the respective Solicitors, or of the Auctioneers, 40 and 42, Queen Victoria Street, E.C., and Westcliff-on-Sea, Essex.

At a very low reserve.

BOURNEMOUTH (Canford Cliffe).—Valuable FREEHOLD BUILDING LAND, having an area of 4 a. 0 r. 8 p., with the following frontages: 905 ft. to Canford Cliffs Road, 880 ft. to De Mauley Road and 190 ft. to Spencer Road. Adjoining Redmoor. Close to the sea. Four-fifths may remain on mortgage, payable by instalments.

MESSRS. HARMAN BROS. (in conjunction with Messrs. REBBECK BROS.) will SELL the above by AUCTION, at the MART, London, E.C., on FRIDAY, JUNE 10th, at TWO o'clock precisely, in one lot.

Particulars and conditions of sale, with plan, may be had of Messrs. WARD, BOWIE, & Co., Solicitors, 7, King Street, E.C.; of Messrs. REBBECK BROS., Auctioneers, The Square, Bournemouth; and of Messrs. HARMAN BROS., 25, Ironmonger Lane, London, E.C.

5 O'CLOCK P.M. MONDAY IS THE LATEST TIME FOR RECEIVING "WANT" ADVERTISEMENTS.
OFFICE: 6, GREAT NEW STREET, FETTER LANE, E.C.

TENDERS—cont. from p. xv.

London, N.E.—For the construction of a public underground convenience at Lower Clapton Road, adjoining the end of Lea Bridge Road, for the Hackney Borough Council, Mr. Norman Scorgie, M.I.C.E., borough engineer and surveyor:—

W. S. Sharpin, Leytonstone, E.	£1,660	0	0
C. Castle & Son, Lower Clapton, N.E.	1,615	0	0
A. E. Symes, Stratford, E.	1,600	0	0
Spiers & Sons, St. John's Wood, N.W.	1,598	0	0
S. Kind, Leytonstone, E.	1,575	0	0
G. Jennings, Ltd., Lambeth Palace Road, S.E.	1,572	6	0
J. Parsons, 190 and 192, Waterloo Road, S.E.	1,543	0	0
Foster Brothers, Norwood Junction, S.E.	1,500	0	0
W. Shurmur & Sons,* Ltd., Riverside Works, Upper Clapton, N.E.	1,485	0	0

* Accepted.

Southampton.—For the erection of three blocks of artisans' cottages on the area north of Simnel Street, for the Corporation. Mr. C. J. Hair, architect, 23, Portland Terrace, Southampton:—

Martin, Wells & Co., 25, Auckland Street, London, S.E.	£7,620
Stevens & Co.	7,354
Wort & Way, Salisbury	7,270
Jenkins & Sons	6,936
Dyer & Sons	6,800
Golding & Ansell, Freemantle	6,459
J. Nichol*	6,200

[Rest of Southampton.]

West Ham.—For making-up Chargeable Lane, for Corporation of West Ham. Mr. John G. Morley, borough engineer:—

D. T. Jackson, Barking	£2,263	18	10
T. Adams, Wood Green	2,233	19	6
J. Jackson, Plaistow	2,051	17	2
W. Griffiths, London, E.C.	1,908	13	6
Parsons & Parsons, Ilford	1,847	18	3
G. J. Anderson,* North Street, Poplar	1,819	17	4

* Accepted.

Whitstable.—For alterations and additions to their school buildings, High Street, Whitstable, for the Trustees of the Whitstable Charities. Mr. Arthur A. Kemp, architect, Tankerton Estate Office, Whitstable:—

Colcar	£3,548
Denne & Son, Deal	3,350
Smith, Maidstone	3,456
Sezar, Sittingbourne	3,298
Browning, Canterbury	3,248
Solly	3,075
Gann & Co.	2,945
Amos & Foad	2,895
Porter*	2,805

[Rest of Whitstable.]

Wilmslow, Cheshire.—For the erection of a residence, for Mr. F. C. Lock. Quantities by Messrs. Groome & Bettington, Palace Chambers, Hereford:—

L. Brown & Sons, Wilmslow	£901	10	0
J. J. Parish, Withington	849	0	0
Adkinson, Bramhall	828	0	0
Peace & Norquoy, Manchester	810	0	0
J. K. Coates,* Wilmslow	797	7	0

* Accepted.

Coming Events.

Thursday, May 26.

INSTITUTION OF ELECTRICAL ENGINEERS.—Mr. A. Siemens on "High-Speed Electric Railway Experiments on the Marienfeld-Zossen Line," at 8 p.m.

Saturday, May 28.

NORTHERN ARCHITECTURAL ASSOCIATION.—Students' Sketching Club Excursion.

Monday, May 30.

SURVEYORS' INSTITUTION.—Annual General Meeting, at 3 p.m.

Tuesday, May 31.

ARCHITECTURAL ASSOCIATION OF IRELAND.—Valedictory address by the president, Mr. Charles H. Ashworth. Election of Officers for Session 1904-5, at 8 p.m.

Wednesday, June 1.

GLASGOW ARCHITECTURAL ASSOCIATION.—Business Meeting, at 8 p.m.

A new Congregational Church at Ilkeston is being erected from designs by Mr. H. Tatham Sudbury, of Ilkeston. The church consists of a nave 65ft. by 27ft., with side aisles, east and west transepts 20ft. 6in. by 12ft. deep, a chancel 24ft. by 19ft. 6in. deep, and a gallery; there are also a large church parlour, minister's vestry and organ-chamber. The accommodation is for 400, with additional accommodation for 130 if required. The schools, although under the church, are above ground line, and comprise a large lecture hall 8ft. high, opening out of which, and divided by movable glazed partitions, are ten classrooms for 300 children; an infants' classroom, library, kitchen, scullery and boys' and girls' lavatories are also provided on this floor. A lift is arranged between the kitchen and church parlour. At the south end of the building there is a mezzanine floor having teachers' rooms cloak-rooms, lavatories, chair store and choir room. The materials being used are zin. sand stock bricks having $\frac{1}{2}$ in. joints, with Derbyshire stone dressings for the exterior; the interior walls being plastered. All woodwork is in pitch-pine and Canadian redwood, stained and varnished, except the chancel, which will be in oak. The tower, rising to about 60ft., has a copper-covered spire, the total height being over 100ft. The contract for the building is £6,000, and the contractor is Mr. Alfred Earnshaw, of Ilkeston.

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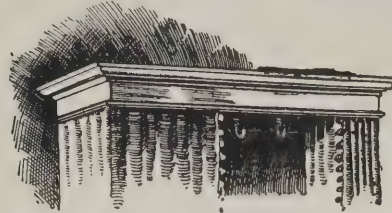
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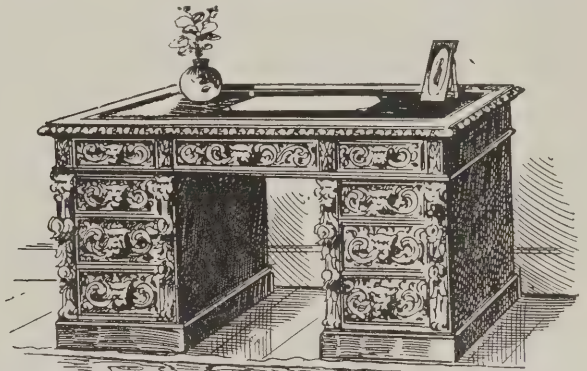


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Elaborately Carved Antique Oak Pedestal Writing Table, fitted with drawers and locks, top lined with leather, 3 ft. 6 in. wide, £4 10 0; 4 ft. wide, £4 19 6; 4 ft. 6 in. wide, £5 15 0.

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Beans ..	per qt.	1 14 0	2 0 0
Clover, best ..	per load	4 0 0	4 7 6
Hay, good ..	do.	3 12 6	4 0 0
Sainfoin mixture ..	do.	3 12 6	4 2 6
Straw ..	do.	1 12 0	2 2 0

		£ s. d.	£ s. d.
OILS AND PAINTS.			
Castor Oil, French ..	per cwt.	1 0 5	—
Colza Oil, English ..	do.	1 1 6	—
Copperas ..	per ton	2 0 0	—
Lard Oil ..	per cwt.	2 15 0	2 17 0
Lead, white, ground, car-			
bonate ..	do.	1 4 10	—
Do. red ..	do.	1 0 4½	—
Linseed Oil, barrels ..	do.	0 15 1½	—
Petroleum, American ..	per gal.	0 0 6½	0 0 6½
Do. Russian ..	do.	0 0 4½	0 0 5½
Pitch ..	per barrel	0 8 0	—
Shellac, orange ..	per cwt.	10 14 0	—
Soda, crystals ..	per ton	3 2 6	3 5 0
Tallow, Town ..	per cwt.	1 2 0	—
Tar, Stockholm ..	per barrel	1 1 6	—
Turpentine ..	per cwt.	2 2 0	—

		£ s. d.	£ s. d.
METALS.			
Copper, sheet, strong ..	per ton	74 0 0	—
Iron, Staffs, bar ..	do.	5 15 0	8 10 0
Do. Galvanised Corru-			
gated sheet ..	do.	10 5 0	10 10 0
Lead, pig, Soft Foreign ..	do.	11 15 0	—
Do. do. English common			
brands ..	do.	12 2 6	—
Do. sheet English glb. per			
sq. ft. and upwards ..	do.	14 0 0	—
Do. pipe ..	do.	15 0 0	—
Nails, cut clasp, 3 in. to 6 in.	do.	9 5 0	—
Do. floor brads ..	do.	9 0 0	—
Steel, Staffs, Girders and			
Angles ..	do.	5 5 0	6 5 0
Do. do. Mild bars ..	do.	6 0 0	6 5 0
Tin, Foreign ..	do.	125 15 0	126 5 0
Do. English ingots ..	do.	127 10 0	128 0 0
Zinc, sheets, Silesian ..	do.	24 10 0	—
Do. do. Vielle Montaigne			
Do. Spelter ..	do.	21 15 0	22 7 6

		£ s. d.	£ s. d.
TIMBER.			
Soft Woods.			
Fir, Dantzic and Memel ..	per load	1 13 0	3 0 0
Pine, Quebec, Yellow ..	do.	5 5 0	6 5 0
Do. Pitch ..	do.	2 5 0	3 0 0
Laths, log, Dantzic ..	per fath.	4 10 0	5 10 0
Do. Norrköping ..	per bundle	0 0 7½	—
Deals, St. Petersburg, Yell.,			
3 x 11 per std.	g	0 0	—

		£ s. d.	£ s. d.
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Unsorted, 3 x 9 ..	per std.	10 0 0	—
Do. do. do. 2½ x 7 ..	do.	8 5 0	—
Do. Blankaholme Yellow.			
2nd, 4 x 9 ..	do.	10 15 0	—
Do. do. do. 4 x 8 ..	do.	9 0 0	—
Do. Archangel, Yell., 3rd,			
3 x 8 ..	do.	10 5 0	—
Do. do. do. 4th,			
3 x 8 ..	do.	9 0 0	—
Do. Sulina, Bosnian,			
White, 1st & 2nd, 3 x 11 ..	do.	8 5 0	—
Do. do. do. 4 x 12 ..	do.	7 5 0	—
Do. Riiisö, Yellow, 1st,			
4 x 9 ..	do.	16 10 0	—
Do. do. do. 2nd,			
4 x 9 ..	do.	14 15 0	—
Do. do. do. 2nd,			
3 x 9 ..	do.	13 0 0	13 10 0
Do. do. do. 2nd,			
3 x 7 ..	do.	9 15 0	10 5 0
Do. Söderhamn, Dry			
Yellow, 3rd, 4 x 9 ..	do.	15 10 0	—
Do. do. do. 3 x 8 ..	do.	10 5 0	11 0 0
Do. Nederkalix, Yellow,			
2nd, 3 x 8 ..	do.	9 0 0	—
Do. Sandvik, Dry Yell.,			
1st, 3 x 9 ..	do.	11 5 0	—
Do. Petschora, Yell., 3rd,			
3 x 9 ..	do.	10 15 0	—
Do. Quebec Spruce, 3rd,			
3 x 9 x 13 ft. ..	do.	9 0 0	—
Do. St. John's Bright			
Spruce, 3rd, 3 x 9 ..	do.	7 15 0	8 0 0
Battens, all kinds ..	do.	6 5 0	12 5 0
Scantlings ..	do.	6 10 0	9 15 0
Flooring Boards in. pre-			
pared, 1st ..	per square	0 9 6	0 12 6
Do. 2nd ..	do.	0 8 6	0 9 9
Do. 3rd, &c. ..	do.	0 8 0	0 8 3

		£ s. d.	£ s. d.
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Ash, Quebec ..	per load	3 12 6	—
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Do. Honduras ..	do.	0 0 4	—
Do. Tobasco ..	do.	0 0 5½	—
Elm, Quebec ..	per load	4 2 6	—
Mahogany, Average Price			
for Cargo, Honduras ..	per ft. sup.	0 0 5½	—
Do. African ..	do.	0 0 3½	—
Do. St. Domingo ..	do.	0 0 3½	—
Do. Cuba ..	do.	0 0 2½	0 0 4½
Do. Lagos ..	do.	0 0 3½	—
Do. Benin ..	do.	0 0 3½	—
Do. Tobasco ..	do.	0 0 5½	—
Oak, Libau, Crown			
Wainscot logs ..	per load	2 15 0	—

		£ s. d.	£ s. d.
Oak, Fiume round logs ..	per load	3 7 0	—
Do. Quebec ..	do.	4 10 0	—
Teak, Rangoon, planks ..	do.	8 0 0	15 10 0
Do. do. logs ..	do.	11 5 9	—
Do. Indian planks ..	do.	12 5 5	—
Do. Moulmein logs ..	do.	6 10 0	8 0 0

Bankruptcies.

[Abbreviations: R.O.—receiving order; P.E.—public examination; C.C.—county court; O.R.—official receiver; Ad.—Adjudication.]

J. JAMES, builder, Croydon. R.O. May 11th.
 T. J. NORTON, builder, Liverpool. R.O. May 11th.
 N. DOWSING, builder, Ipswich. Adj. May 12th.
 J. BUTTERWORTH, builder, Dearnley, Rochdale, R.O. May 13th.
 H. POLLARD, plumber and contractor, Manchester. R.O. May 9th.
 J. M. WILLIAMS, builder, Newport, Mon. R.O. May 11th.
 J. BULLING, builder, West Bridgford, Nottingham R.O. May 9th.
 W. WENHAM, electrical engineer, Croydon. R.O. May 12th.
 DE LACY BROTHERS, electrical engineers, Liverpool. R.O. May 11th. First meeting, O.R.'s, Liverpool, May 25th, at 2.30. P.E., Liverpool C.C., June 2nd, at 11.
 J. WOODWARD, builder, Wilderspool and Warrington. First meeting, Warrington C.C., June 3rd, at 10.45. P.E., same, at 11.
 W. T. SIER, builder and contractor, Newport, Mon. First meeting, O.R.'s, Newport, May 26th at 11. P.E., Newport Town Hall, June 9th, at 11.
 J. FRAMPTON, builder and contractor, East Dulwich. R.O. May 13th. First meeting, London Bankruptcy Court, May 30th, at 11. P.E., same, June 30th, at 11.

Obituary.

Mr. Frederick Margrave, of the firm of Margrave & Peacock, architects, Swansea, died recently at his residence at Langland, Mumbles. He was only thirty-six and died from pneumonia, following a chill contracted by bathing.

H.M. OFFICE OF WORKS

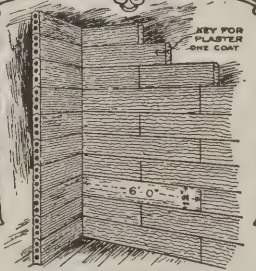
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THE BUILDERS' JOURNAL

AND ARCHITECTURAL RECORD.

June 1, 1904. Vol. 19, No. 486.

6, Great New Street, Fetter Lane, E.C.

Summary.

Attention is drawn to the restricted times when it is now possible to visit the Soane Museum in Lincoln's Inn Fields, which is closed for half the year. (This page.)

The mayor of Harrogate is drawing up a fair contracts clause for insertion in the Corporation contracts. (Page 264.)

Under the administration of the London Board schools by the London County Council it seems probable that the services of Mr. T. J. Bailey will not be required, as it is suggested the work shall be put under the direction of the superintending architect's department. Mr. Bailey's experience, however, is so extensive and valuable that it is hoped no such change will be made. (This page.)

A new ladies' bath has been completed at Battersea with three tiers of stone seats in place of the usual dressing-boxes, these latter being represented by cubicles beneath. (Page xviii.)

At the meeting of the Institution of Mechanical Engineers being held at Chicago Mr. George Watson, M.I.M.E., read a paper on refuse destruction in which he deprecated the claims made for town refuse as a fuel. The truth about the matter lies between two extremes: 1lb. of steam can usually be obtained from 1lb. of refuse in summer and 1½lb. in winter. (Page 260.)

Two correspondents observe that they recently visited fifteen of the City churches on a Saturday afternoon and only three were open. They urge how disadvantageous this is to architectural students. (Page 265.)

An unfortunate disagreement has arisen between the St. Louis Exposition authorities and Mr. Cass Gilbert, the architect of the great Art Palace, in regard to the Festival Hall and its design. Mr. Gilbert claims £9,000 for commission, which the authorities dispute. (This page.)

Mr. Walter Jones's book on heating, of which a third edition has just been issued, is a valuable contribution to the literature of the subject. (Page 266.)

Veneered doors, which have been used for some years in America, are being introduced into this country by a Canadian firm. They are half as cheap as solid hardwood doors, will not warp or twist, and have a rich appearance. (Page 266.)

Pugin's house at Ramsgate was struck by lightning last week and damaged severely. (Page 264.)

Mr. H. T. Seward, president-elect of the Surveyors' Institution, does not think there is much chance for the "Easement of Light Bill" in this session of Parliament. (Page 264.)

The Soane Museum.

SPECULATION as to who will succeed to the curatorship of Sir John Soane's Museum in Lincoln's Inn Fields, rendered vacant by the death of Mr. Birch, has drawn some attention to the present restricted hours during which it is possible for the public to visit this most interesting collection, consisting chiefly of architectural casts, sculptures, models and designs, besides Hogarth's inimitable pictures of the "Rake's Progress" and "The Election." We notice that complaints have been made in the newspapers, one correspondent defying anyone to remember off-hand the hours, days and months when the museum is open, and stating that he made four unsuccessful attempts to obtain admission, presumably because he went at the wrong times. Doubtless there is a measure of satisfaction in remembering that the present rules are considerably better than those of a generation back, for thirty years ago the museum was only open on Wednesdays from February to August, and on Thursdays and Fridays in addition in April, May and June—and then only with an order obtained beforehand by written application—whereas to-day the museum is open free from 11 to 5 on Tuesdays, Wednesdays, Thursdays and Fridays in March, April, May, June, July and August. Nevertheless, it seems only right that so interesting a collection should be open to the public all the year round, instead of being closed for six months, as at present, and it is therefore to be hoped that with the appointment of a new curator the trustees will see fit to alter the regulations, and so confer a benefit which will be especially appreciated by architects.

The Buildings of the St. Louis Exposition.

THAT the architects of America have produced a magnificent group of buildings for the St. Louis Exposition will be universally admitted. Their teachers of course were the French, whose creations at Paris, if at times incongruous and strange, have always shown a sense of monumental effect rarely seen in this country, though it must be admitted that Mr. Miller was particularly successful at Glasgow. But the buildings of the St. Louis Exposition are exceptionally well laid out and nobly planned. The vast sums allotted for their erection placed opportunities for architectural conceptions which have never been equalled in any other exhibition, and those opportunities have been used to splendid effect. The Palace of Transportation, admittedly French, is a great tribute to

American architecture; the Palace of Education is a most monumental Classic building; and equally fine are the U.S. Government building, the Art Palace and the Festival Hall. As regards the two last, unfortunately some dispute has arisen between Mr. Cass Gilbert, the architect, and the Exposition authorities; indeed, we learn that the whole undertaking has created more or less friction among the architects concerned, some of whom have resigned. It appears to have been the original intention that the Fine Arts Palace, estimated to cost £200,000, should form the crowning feature of the scheme, but a change was made, assigning the central position to the Festival Hall, with the Terrace of States, cascades and flanking pavilions, which now practically hide Mr. Gilbert's palace: so that he has brought a claim of about £9,000 against the authorities for commission on the Festival Hall, with which Mr. Masqueray seems to have been associated as architect. It is regrettable that such a dispute should have arisen, for the work as completed is so excellent.

The London School Board Architect.

FOR thirty-two years Mr. T. J. Bailey has been in the service of the London School Board—twenty years as chief architect and twelve as assistant to Mr. Robson, who may be said to have formulated the best possible type of elementary school plan for London. Mr. Bailey has carried on Mr. Robson's work; two hundred schools have been built under his direction; and the experience he has acquired places him among the leading authorities on the subject. It is very surprising therefore to learn that the London County Council, in whom the administration of public education is in future to be vested, seem likely to have no need for Mr. Bailey's services, as it is suggested the work shall be undertaken by the superintending architect's department. That department has certainly produced some very creditable buildings, and we have no wish to disparage the ability of its officials; at the same time no architect in it has the knowledge of elementary school buildings which Mr. Bailey possesses. This is not a mere question of one official and another, for considerable interests are at stake; the value of work now in hand is £750,000, and there are 500 voluntary schools to be taken over in addition to the previous responsibilities of the School Board. The architect's department of the Council is not equal to the task and it would be a great loss if Mr. Bailey's services were not requisitioned.

MEN WHO BUILD.

No. 71.—ARTHUR H. RYAN-TENISON,
F.R.I.B.A.

IN reviewing the work of an architect of our own time it is somewhat difficult to get into correct perspective, to approximate to the position that will be taken by a future generation of critics. In these articles we endeavour to maintain a fair proportion and a balance among the men and the tendencies of the age. Tastes differ, fashions change, and the world moves on. Impressed by the personality of a man, the tendency is to take too lenient a view of his work; intimacy with the details of life blunts our appreciation of him, or egoism breeds depreciation of his abilities. The public of a future generation, unsubjected to such influences, ignorant of many of the compelling causes of the general condition of present-day practice, unpossessed of the evidence necessary to form a true judgment, and with but the smallest clues to the characters of its producers, must necessarily ignore much that we accord praise to, while, on the other hand, what may appear to us mere commonplace and trivialities may be lauded as instances of great originality. We cannot therefore prognosticate an architect's reputation; but we can judge whether his work is worthy of future consideration. By what tests, though, may we know the architects of our time? Fortunately they are few, and generalizations. Firstly, they must be men of intellect, for this embraces the essential condition of every work of art that it shall be fitted to its purpose, and be the expression of an idea; and secondly, they must have personality, for this is the originality that makes leaders of thought and marks the stages in human progress. Personality is essential to the artist, the scientist, the philosopher, the politician whose work shall be remembered by future generations.

Mr. Arthur H. Ryan-Tenison's work is noticeable for its freshness and virility, its evident fitness to the conditions of its pro-

duction. We may seek the reasons of his success in the great pains he takes with all his works—he is responsible for every detail, and does not choose to undertake a task with the least possible trouble to himself; he rightly considers that architecture is a pursuit which should give pleasure to its followers and not be looked upon as a mere business, and he prefers therefore to produce a creditable building, even if it be unremunerative. He thinks the great bugbear of present-day architecture is want of personal refinement and proper professional conduct among its designers. It has been Mr. Tenison's lot always to be fettered by strict economy, his clients requiring the greatest amount of accommodation for the least expenditure, but he has had the satisfaction of knowing that he has fulfilled the expectations of his clients, giving them well-thought-out, utilitarian buildings at least cost, without the usual heavy extras that have so discredited the profession in the eyes of the public; while all credit is due to him for having at the same time studied appearances and shown the artist hand. Mr. Tenison is a notably ingenious planner, a matter in regard to which

Englishmen are usually criticized by Continental architects, and this is due to his taste for symmetry, which he is convinced is desirable on logical grounds of utility as well as for appearance. The rambling plan is easy, but certainly not organic. He has been notably successful also in introducing more rich and harmonious colour into interiors than is usually the case. To particularize, however, we will run through the stages of development by which Mr. Tenison has reached his present position.

He was born at Towcester in 1861, and originally proposed to follow his father's vocation of medicine, studying the subject for a time and gaining scientific precision in manner, and a knowledge of anatomy and the functions of the human body that was of material educational value and of service in the practical side of architecture, such as



ARTHUR H. RYAN-TENISON, F.R.I.B.A. (Photograph by Elliott & Fry.)



ST. PETER'S VICARAGE, SOUTHWARK.



CAMDEN SCHOOLS, PECKHAM.



WEYBRIDGE NATIONAL SCHOOLS: VIEW OF GIRLS' AND INFANTS' DEPARTMENT LOOKING EAST.



SCHOOLS AT WEYBRIDGE: ENTRANCE QUADRANGLE.

insanitation and hygienic planning. His tastes did not lie that way, however, and he abandoned medicine for architecture. In 1879-80 he was for one and a half years studying at South Kensington under Professor Hargree, afterwards being articled to Mr. E. Swinfen Harris, F.R.I.B.A., at Stony Stratford, with whom, as county surveyor for Buckinghamshire, he received more than the usual professional training. In company with Mr. Harris he went for Continental trips, visiting Germany, France, Belgium and Holland, paying close attention the while to Gothic work. In 1884 Mr. Tenison was an improver for a short time with the late Ernest C. Lee, and saw the completion of St. Mary's, Whitechapel; he was also engaged upon a competition design for Dublin Municipal Museum and Art Gallery which gained the second premium. He then went as assistant to Mr. E. Hoole for two years, and gathered experience in the completion of Glengall Mansions, the first portion of Toynbee Hall, and workmen's dwellings for Miss Octavia Hill. His health now broke down and he was obliged to go to Australia for a couple of years (1887-8), making a sketching tour on the way through Paris and the principal towns of Italy. He entered the office of Messrs. Tosh & Robinson at Sydney, well-known architects there, being engaged principally on detail drawings for the new Association

cricket pavilion. He also practised alone for about eighteen months. He returned to this country in 1889 and entered the office of

Mr. Rowland Plumbe, F.R.I.B.A., for a short time. In 1890-1 he was with Messrs. J. T. Micklethwaite & Somers Clarke, being engaged with the late Mr. Charles Cooper, A.R.I.B.A., upon a design for the Church House, and Coldharbour House, near Hayward's Heath, for Mr. Cox, the banker. Mr. Tenison then went in practice for himself, first taking and passing the examination for the Associateship of the Royal Institute of British Architects, and carried out large additions to and amendments at Minterne Church as a memorial to the late Lord Digby, coloured decoration and restoration at St. John's Church, Battersea, London, S.W., and a new wing for Battersea Training College, during the progress of which he was joined by Mr. E. Thornton, A.R.I.B.A.

While in association with Mr. Thornton the following works were carried out:—New girls' school for Canon Ransford at Herne Hill; old and new schools at Streatham; new schools at Sidlow Bridge and at Tatsfield; houses at Eton for the Rev. E. D. Stone, of Eton College; and several important restorations and enlargements. In 1898 Mr. Thornton left to take up an appointment with Sir Ackwan Martin & Co., Government contractors, of Calcutta, since which

B



ST. ANDREW'S MISSION CHURCH, ARLESEY, NEAR HITCHIN, LOOKING EAST.



ST. JOHN'S TRAINING COLLEGE, BATTERSEA: LIBRARY WING.

time Mr. Tenison's work has included a new church at Arlesey (illustrated in our issue for September 18th, 1901, and on the preceding page); new wing and gymnasium with various other additions at Battersea Training College (the wing was illustrated in our issue for January 16th, 1901); the decoration of St. James's Church, Bermondsey (described and illustrated in our issue for December 5th, 1900); cricket pavilion, house and new wing and various other works at Radley College, near Oxford; new mission-rooms at Camden (illustrated in our issue for December 11th, 1901); rectory house for St. Peter's, Southwark; new church schools at Hadleigh, Suffolk (illustrated in our issue for July 2nd, 1902, and in the centre plates of this issue); schools at Weybridge; a house in Roehampton Lane, Barnes, for Mr. G. M. Callender (to be commenced shortly); and new altar panelling at the east end of the Mission Church to Calcutta Cathedral. A number of other buildings have been erected from Mr. Tenison's designs, and of course, as with every architect, he has prepared many designs that have not been carried out, including some premiated in competitions.

Minterne Church, to which Mr. Tenison has done so much, dates from the fifteenth-century; on p. 261 is a view showing the western gallery and seats, executed in oak. The design is powerful for this early stage in Mr. Tenison's career. Each bench end is of special design; the carving is very successful. The Camden Schools at Peckham also belong to this period.

At the St. John's Training College at Battersea a great deal of work has been done by Mr. Tenison. The first portion, carried out when he was associated with Mr. Thornton, was the library wing illustrated on this page. The brick pilasters on the first storey were not given a correct entasis owing to a mistake of the builder, and there was no opportunity to remedy them. The porch and doorway shown in our view have since been removed, and re-erected to do duty for the Jubilee wing, illustrated in our issue for January 16th, 1901.

The early buildings erected at the college are simply barbarous and mar Mr. Tenison's work, and it is to be hoped that they will be replaced by buildings worthy of this institution and more in accord with modern ideas of hygiene. The common room is very pleasing in its colour scheme, having neat green-stained woodwork and distempered walls. The same

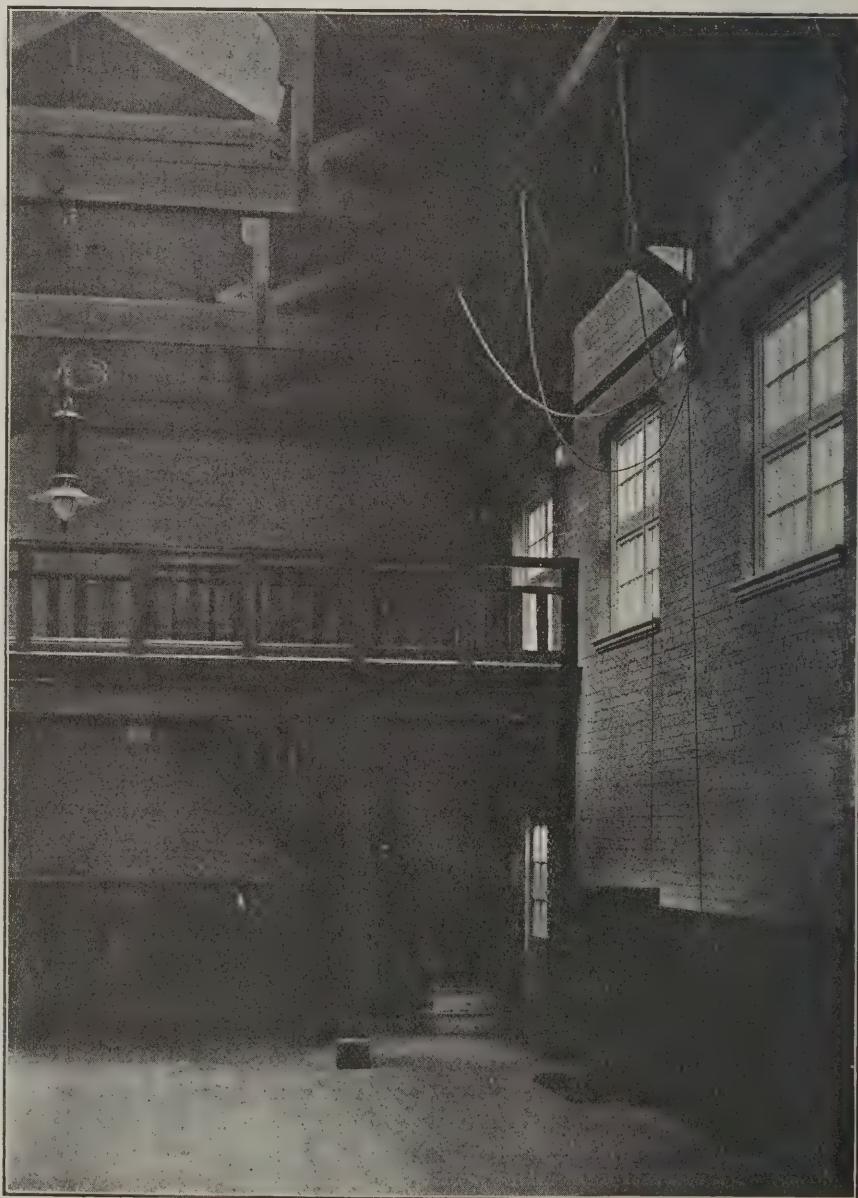
remark applies to the gymnasium, where the woodwork is again stained green and the walls lined with Duresco. It has been found to serve its purpose exactly, Mr. Tenison taking considerable trouble to see that the apparatus for athletic exercises should be properly placed. In fact, the building has been modelled to dimensions and shape best suited to the requirements. The fireplaces are to be replaced by radiators eventually.

The little church at Arlesey is remarkable for the low cost at which it was erected. It has 230 sittings and was erected for £730; it is built in accordance with the rules of the Incorporated Church Building Society. The building was desired for use as a meeting hall and this dictated its character, but the way in which the architect has separated the chancel by an arch and imparted some ecclesiastical feeling into the building is most happy and suggestive.

The national schools at Weybridge and the church schools at Hadleigh, illustrated in this issue, are among Mr. Tenison's more recent works, and had to be erected very economically. The plans are skilful and have been found to be most satisfactory.

We give two illustrations of houses designed by Mr. Tenison, one for himself (p. 263) and the other for a bachelor, Mr. G. M. Callender (p. 261); here again the planning is instructive and suggestive.

The rectory house at St. Peter's, Southwark,



GYMNASIUM, ST. JOHN'S TRAINING COLLEGE.



COMMON ROOM, ST. JOHN'S TRAINING COLLEGE.

(see p. 256), is a remodelled building, with additional accommodation in a back addition, the design being restricted by questions of right of light, the London Building Act, &c. The doorway is old and the bays are new. The result is certainly pleasing, notwithstanding adverse circumstances.

The altar panelling in the east end of the Mission Church to Calcutta Cathedral is a beautiful piece of work (see next page). The building in which it is placed is a most peculiar old bastard Georgian kind of structure, made untidy with punkahs and numerous wooden lattices similar to those in meshrebeeyehs. The windows and altar subjects are the work of Mr. P. E. Demain Hammond, a brother of the celebrated sister of that name.

The new house and dormitories at Radley College, Abingdon (see pp. 262, 263 and 264, and centre plate), are nearing completion. The peculiar plan at the back of the house was dictated by the necessity of leaving a drive-in to the quadrangle at the back, and as will be seen from our illustration of this side it looks very picturesque. The building is not flattered by the photographs—in fact, it looks much better in actuality, and the combination of the domestic and the collegiate portions is very skilfully managed. The right feeling to the latter is imparted in quite an original manner. The internal fittings are superior to anything in the rest of the college and are pleasingly coloured. The joinery is very well done, and a great deal of trouble has been taken with special mouldings, a matter in which Mr. Tenison is particular and wherein his work is most personal and captivating. The carved panel over the entrance door of the tower would, in Mr. Tenison's opinion, have been better executed as originally designed, the figures being placed in a series of lancets to correspond with the windows and solids over the panel. However, in deference to the wishes and instructions of the authorities that be, Mr. Tenison had to abandon this vertical treatment for the horizontal band of fine carving and the plain background as seen in the photograph, whilst the Academy drawing shows the vertical treatment. The tower would have been improved by greater height, and it is to be hoped Mr. Tenison will be allowed to add another storey at some later date. The adjoining building on the right, built by Carpenter in his "Carpenter's Gothic," is hopeless and should be rebuilt or remodelled. It is remarkable what a lot of accommodation is obtained in the building. The builders, Messrs. Hutchins & Sons, of Oxford, deserve praise for the manner in

which they have carried out their portion of the work, as also the firms that executed the carving, viz., Messrs. Martyn, of Cheltenham, and the mason, Mr. William Axtell, of Oxford. The cricket pavilion was executed

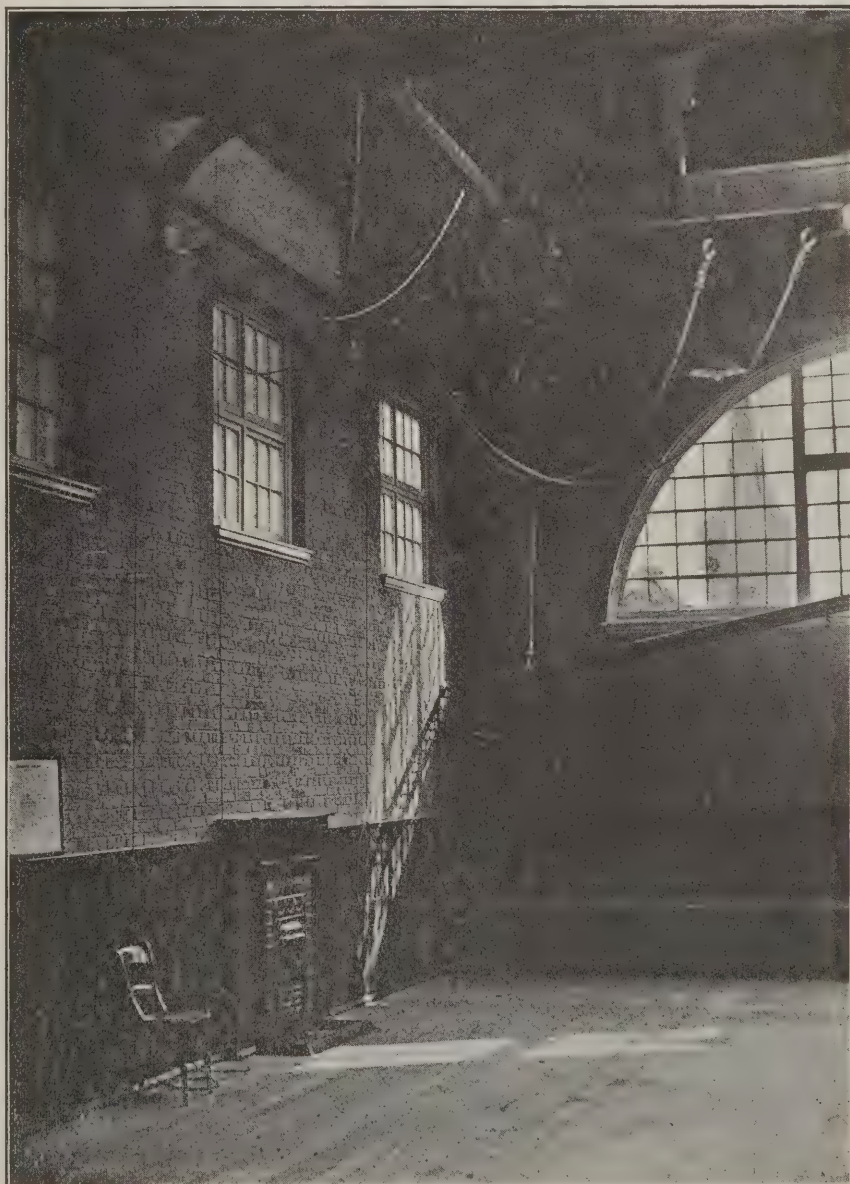
some years ago, and is a successful little building expressive of its purpose—it does not look like a country bungalow, such as we generally see.

Mr. Tenison has special knowledge of the design of schools, having been commissioned to advise upon, adapt to modern needs or rebuild about thirty schools, and as the subject of education is now so much before the public we look forward with considerable interest to see what he will do in the future in this branch wherein he has shown such promise.

In conclusion, we call attention to the simplicity of the means by which Mr. Tenison gains his effects. It would be well if this were more often evident in the work of architects to-day.

Obituary.

Bailie Milne, of St. Andrews, died recently at the age of eighty-two. Among the buildings erected from his designs are the mansion house known as "Westerlee" in the west end of the town, but he is chiefly remembered in connection with South Street, which was planted with trees under his direction. The design for Manchester Town Hall which he submitted in competition was specially mentioned by the assessors as exhibiting the Scottish baronial style.



GYMNASIUM, ST. JOHN'S TRAINING COLLEGE.

REFUSE DESTRUCTION.

A MEETING of the Institution of Mechanical Engineers is being held at Chicago, U.S.A., from May 31st to June 3rd and several interesting papers have been contributed. These include two papers on refuse destruction. Mr. George Watson, M.I.M.E., says that while town refuse varies considerably according to local conditions, it averages about one-third by weight of water, one-third combustible and one-third incombustible matter, the last remaining as hard clinker after burning. He draws attention to the danger of allowing refuse to accumulate, and especially to the practice still continued by local authorities of filling up old pits and hollows with it, and afterwards erecting dwelling-houses upon it, destructors only being adopted when every pit and hollow within the municipal boundary has been filled. Mr. Watson describes how the natural draught in early forms of destructors has given place to forced draughts, by which higher temperatures are obtained and consequently increased steam pressure, but he deprecates the claims that have been put forward of the town refuse being a fuel, failure to realize expectations having caused a tendency to discredit altogether the possibility of steam-raising from town refuse. The truth is between the two extremes; 11b. of steam can usually be obtained from 11b. of refuse in summer and 1½lb. in winter. He considers a destructor chimney shaft need not exceed 100ft. to 120ft. in height; it should be constructed to withstand the full heat of the gases, and should therefore be



SCHOOLS AT SIDLOW BRIDGE, REIGATE.

lined to the top with firebricks—he recommends also an air space, properly ventilated, between the firebrick lining and the outer shell. Reference is also made to the advantage of small-size destructors for hospitals, large hotels, &c.

The paper by Mr. C. Newton Russell, borough electrical engineer, Shoreditch, is on much the same lines. He considers all the

successful destructors by different makers operate on practically the same principle and are about equally efficient. In referring to the use of clinker for plastering the fact is noted that Mr. E. J. Lovegrove, borough engineer for Hornsey, has found blowing occurs in small places in the plaster due to minute particles of iron in the clinker. These have to be cut out and made good.



ALTAR. PANELLING, MISSION CHURCH, CALCUTTA CATHEDRAL. PAINTINGS AND STAINED GLASS BY P. E. DEMAINE HAMMOND.

Enquiries Answered.

The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Wesleyan Church House, Westminster.

HORSHAM.—W. B. writes: "I should be glad of some information about the proposed new Wesleyan Church House to be built on the site of the Westminster Aquarium. Is there to be an open competition, and if so, to whom should application be made for the conditions, &c.?"

There is to be an open competition, as announced on p. 207 of our issue for May 4th. The conditions are not yet advertised. Mr. Perks, M.P., is the moving spirit in the matter, and no doubt the public will be fully informed of the conditions of competition shortly.

Land Surveying in South Africa.

BURY.—CLUBS write: "Please give the names and prices of any books which deal with land and mine surveying in South Africa."

There is no book dealing specially with land surveying in South Africa, but colonial surveying is dealt with generally in the large books on surveying, such as Middleton, Chadwick and Bogle's "Treatise on Surveying" (price 21s. post free from our offices). As regards mine surveying, there is Brough's "Treatise on Mine Surveying" (price 7s. 6d. post free from our offices).

Fees for Work not Carried Out.

A.R.I.B.A. writes: "What fees am I entitled to for the following works, not carried out:—(1) Approval drawings of plans, coloured, of all floors for £6,000 shop premises with two frontages 30ft. and 40ft. respectively, by 50ft. high; (2) amended



WESTERN GALLERY, MINTERNE CHURCH, DORCHESTER.

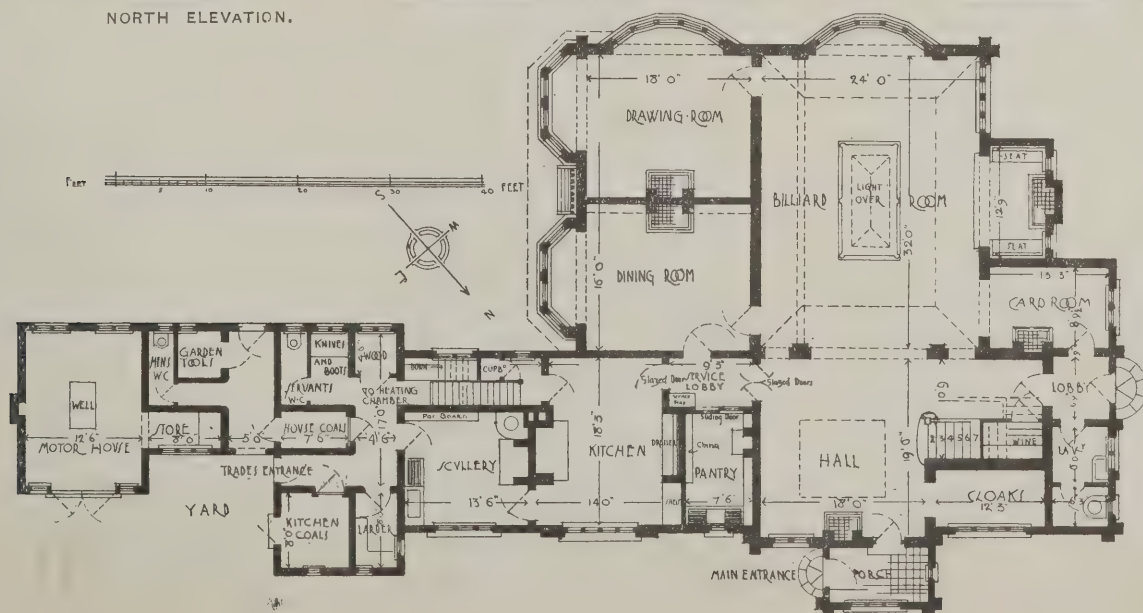
approval drawings showing elevations, sections and plans of each floor, coloured; (3) negotiating for purchase of land for same, valued at £3,000?"

(1) 2½ per cent. on estimated cost; (2) 2½ per cent. on estimated cost if so altered as to be practically a new design, or if only

ordinary alterations, charge for time [and trouble involved; (3) half the fees payable on sale (i.e., 2½ per cent. on the first £100 of the purchase money, 1¼ per cent. on balance) and out-of-pocket expenses. For further information see "Specification No. 7" (price 3s. 3d. post free from our offices).



NORTH ELEVATION.



HOUSE AT ROEHAMPTON. A. H. RYAN-TENISON, F.R.I.B.A., ARCHITECT.



RADLEY COLLEGE, ABINGDON: ENTRANCE FRONT.

Bricks and Mortar.

Aphorism for the Week.

Mediævalism is as dead as a fern leaf in a lump of coal.—THOMAS HARDY.

Our Plates. Mr. RYAN-TENISON's designs are referred to in the article dealing with his work in this issue. The drawing of the additions to Radley College is hung in this year's Royal Academy exhibition.—Kettering Free Library, which was recently opened by Mr. Andrew Carnegie, occupies a site near the parish church. The building is planned upon the "open access" principle, the book stacks of the lending department radiating from the centre of the delivery counter, which is provided with "in and out" barriers. A strong-room for rare books adjoins the librarian's room, and over these rooms a caretaker's house is provided. Red sandstock bricks, Ketton stone and Collyweston stone slates are used externally, while internally the walls are panelled in oak, the ceilings being barrel-vaulted in plaster. Messrs. Goddard & Co., F.F.R.I.B.A., were the architects, the contractors being the Kettering Co-operative Builders, Ltd. Mr. W. I. Vinnell acted as clerk of works. The drawing is exhibited at this year's Royal Academy.

Glasgow Students' Work.

The exhibition of last winter's architectural works at the Glasgow School of Art is a very representative one, showing industry on the part of most of the exhibitors and giving promise in not a few of still better things in the future. Pencil and coloured drawings and designs predominate over those in ink, and special attention is drawn to a number of time studies of subjects not requiring

elaborate plans, which therefore enable both instructor and student to know what progress is being made, besides giving the latter a better command over the pencil and the faculty of design. In the more finished designs a study is made of style. Those by Mr. George M. Stewart of a "Tower and Spire" and "A Wall Fountain in Terra-Cotta" are very good studies in Italian

Renaissance. Of the other designs, that by Mr. Tom Tait, "A memorial to a Deceased Monarch," is spirited and well-thought-out, as is also the band-stand of Mr. E. W. Smith. A large number of fine measured drawings of very interesting subjects are also shown. Mr. T. Dunlop Rankin exhibits a good set of Falkland Palace, with its interesting Scottish Renaissance detail, and of Peffermill House, Duddingston. The drawings of Glamis Castle, Forfarshire, by Mr. William Wright, and of Ralph Allan's town house, Bath, by Mr. T. C. Pomphrey, are also good examples of measured work. Drawings of Seaton Delaval are shown by Mr. W. Ferguson, of Croraguel Abbey by Mr. G. M. Stewart—very nicely coloured if somewhat blue about the shadows—and two sets of drawings of the Hamiltons' mausoleum, a comparatively modern but very expensive building, by Mr. D. L. Harley and Mr. T. C. Pomphrey. The usual subjects in Glasgow Cathedral are measured, but a marked improvement is noticeable in the number of measured drawings of interesting buildings in the city or its immediate neighbourhood, such as the house in Charlotte Street by the Brothers Adam, by Mr. E. W. Smith, the old college—now the University gate lodge—by Mr. E. G. Wylie, who is also responsible for a fine set of drawings of the Faculty Hall, a rich Renaissance front, and the National Bank which formerly faced Queen Street; and the Trades House by Mr. A. McKenzie. On the whole, both the instructor, Mr. Alexander McGibbon, and the various students represented are to be congratulated on the results of a very successful session's work.

Bridging the Medway.

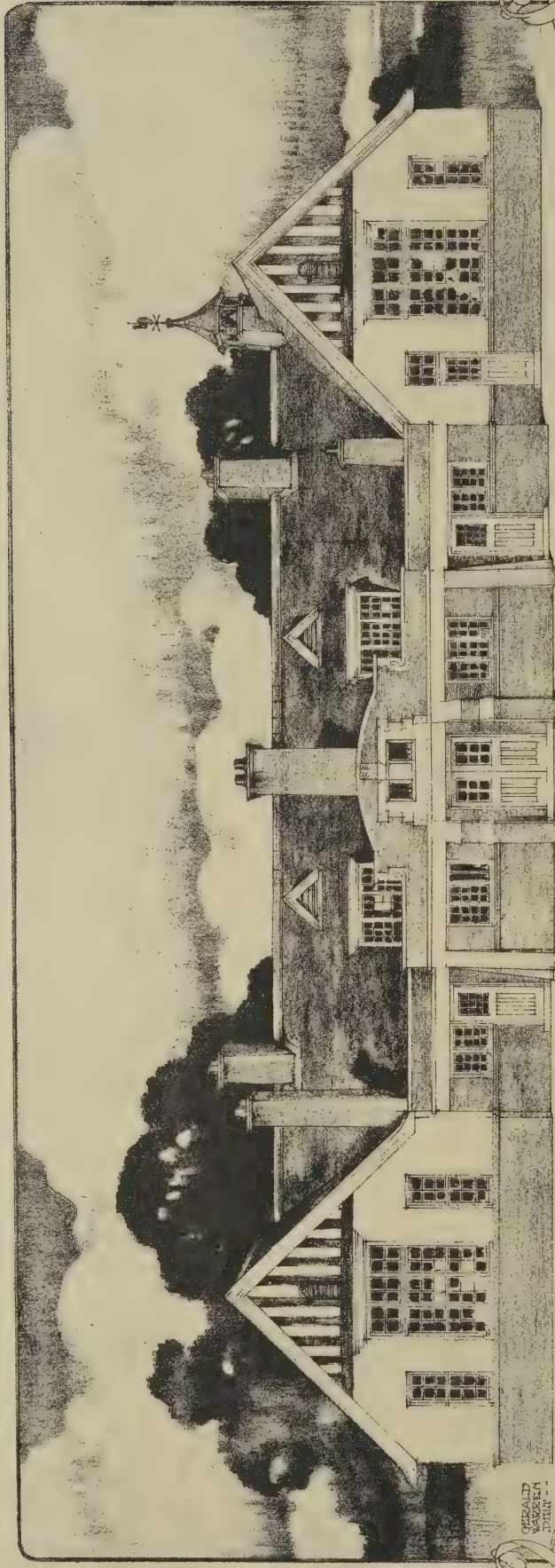
PLANS have been placed before the Kent County Council for bridging the Medway at three points—Aylesford, Snodland and East Peckham—at a total cost of £70,000. The most important scheme relates to Aylesford, where it is urged that the present picturesque bridge is an obstruction to the water in flood time. At Snodland, three or four miles above Rochester, a bridge is wanted in the interests of the cement workers, many of whom are employed on one side of the river and live on the other. At East Peckham there are, at Branbridges, already three bridges within 300 yards, so dangerous as to be a menace to traffic both by road and river. The county council regard the Branbridges scheme as the most urgent and have deferred the others.



RADLEY COLLEGE: VIEW OF MASTER'S HOUSE FROM QUADRANGLE.

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Supplement to
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Wednesday, June 1st, 1904.

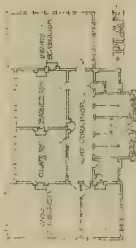


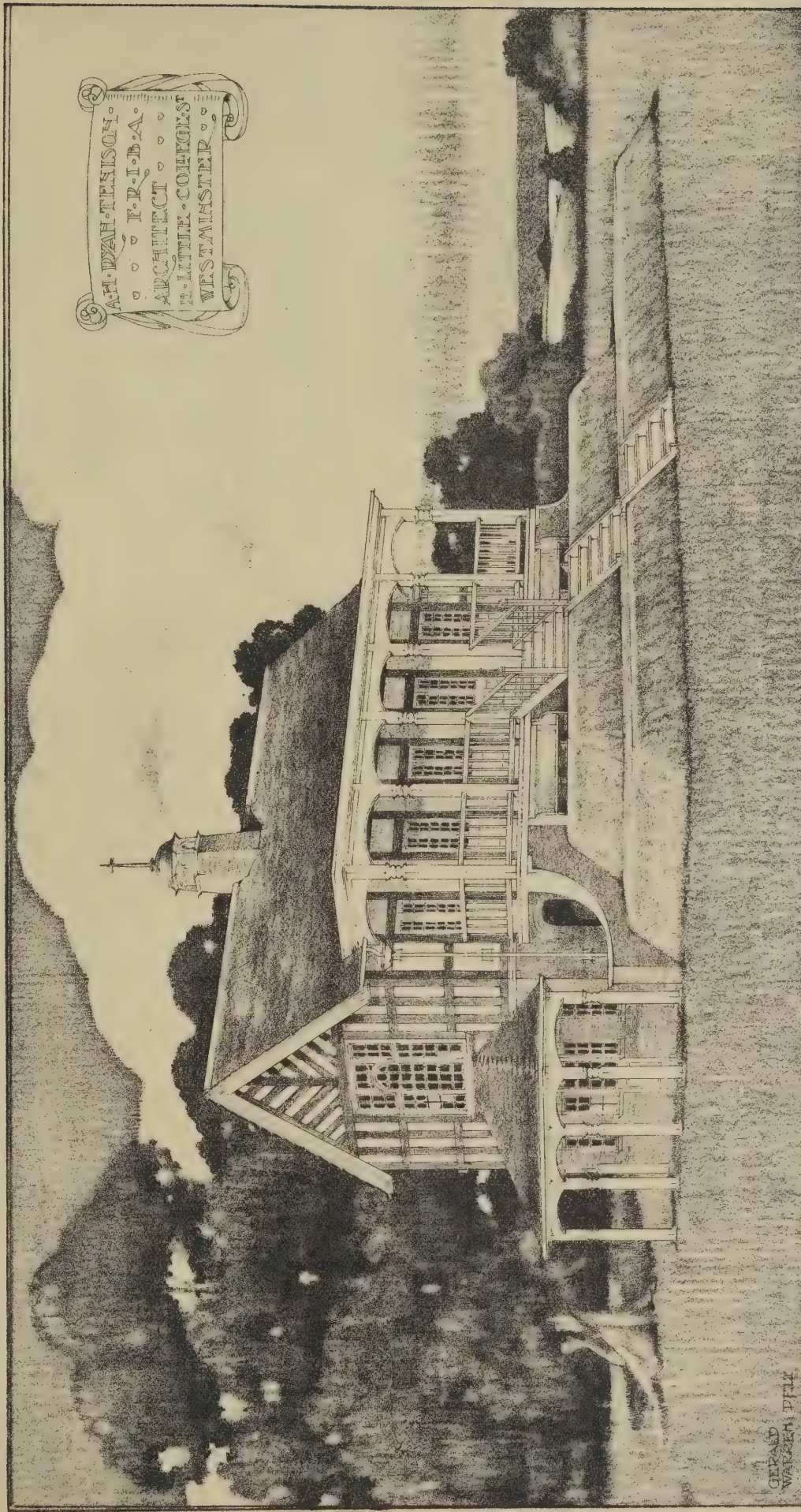
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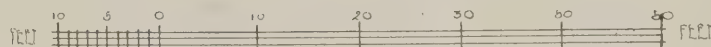
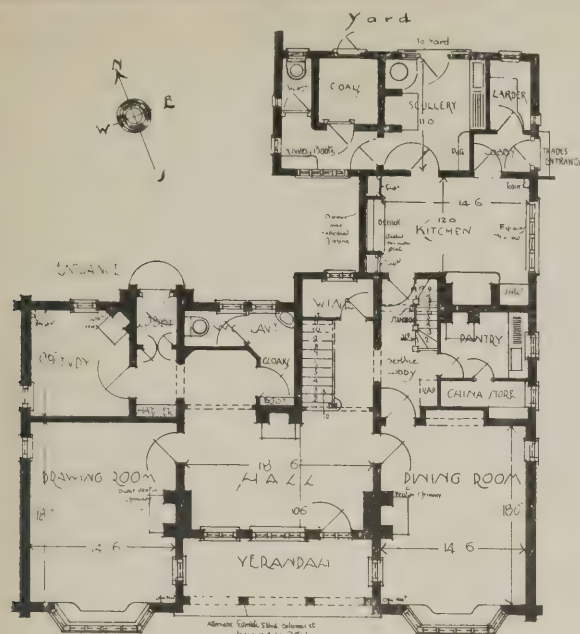


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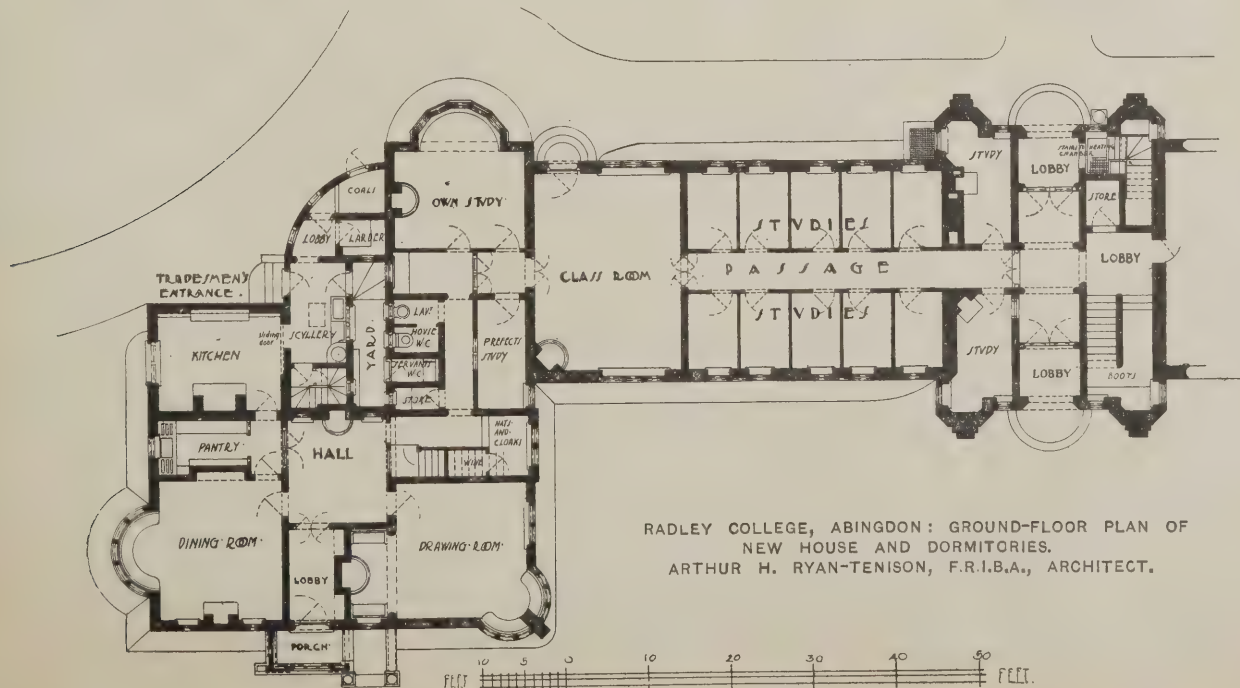
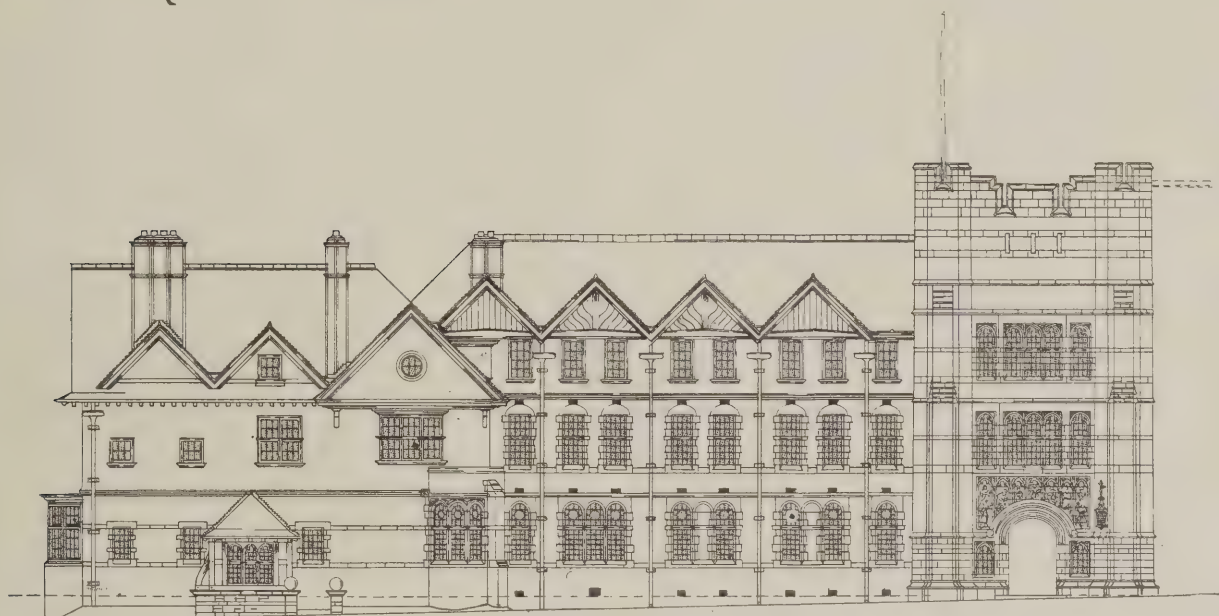
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PROPOSED NEW HOUSE FOR ARTHUR H. RYAN-TENISON, F.R.I.B.A.



ARTHUR H. RYAN-TENISON, F.R.I.B.A., ARCHITECT.

Keystones.

A new Public Library in Dublin, in Lower Kevin Street, has been erected from designs by Mr. Charles M'Carthy at a cost of £4,500.

The Victory Bridge across the Regent's Canal at Stepney is to be reconstructed at a cost of £17,000.

At Edmonton Union Workhouse an additional storey is being erected according to the designs of Mr. T. E. Knightley, F.R.I.B.A.

Competition for Carnegie Library, Peterborough.—More than a hundred applications for particulars have been received. Mr. Leonard Stokes is the assessor.

The Hotel Metropole at Southend has been completed at a total cost of £300,000. There are about 300 rooms. Mr. James Thompson, of Southend, was the architect.

Mr. H. A. C. Warmington, F.S.I., has become a partner in the firm of Messrs. Glasier & Sons, surveyors, 7, St. James's Street, London, S.W. The style of the firm will remain the same.

Berwick Town Walls.—In the House of Commons to-day Mr. Brice, M.P., will ask whether the Government intend to take steps to prevent the demolition of the ancient town walls of Berwick, officially sanctioned by the mayor and corporation.

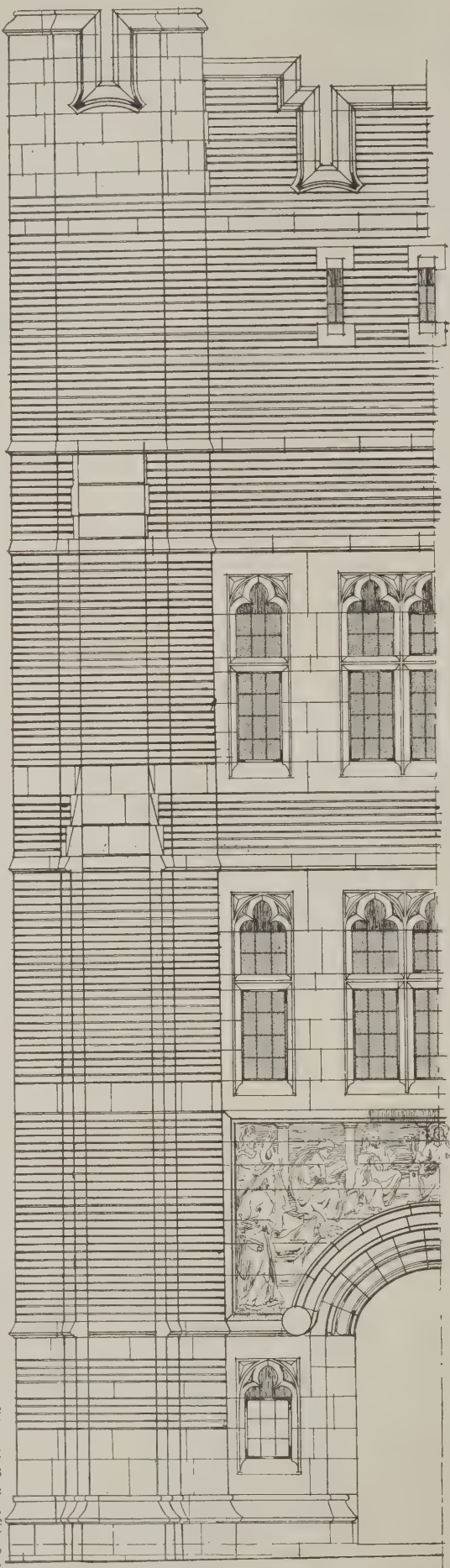
The Grange, Ramsgate, a portion of the premises erected by Welby Pugin for his own residence, was struck by lightning last week and set on fire. The Gothic roof and the gables were ruined, and the tower was severely damaged.

Surveyors' Institution.—At the annual conference held at Newcastle last week Mr. H. T. Seward said he did not think there was much chance in Parliament this year for the "Easement of Light Bill" drawn up conjointly by this Institution and the R.I.B.A. They wanted to make it clear that the recent decision of the House of Lords was the law in the matter.

Hogarth's House.—The house at Chiswick in which William Hogarth lived was purchased some time ago by Lieutenant-Colonel Shipway with the intention of dedicating it to the public. It is about to be opened as a Hogarth Museum, and in celebration of the event a dinner was held there on Saturday evening. Sir L. Alma-Tadema presided, and among those present was Mr. Aston Webb, R.A., who proposed the toast of "Art."

Accommodation in Elementary Schools.—In the new code of regulations for public elementary schools just issued by the Board of Education it is stated that the recognized accommodation of a school may from time to time be revised by the Board, and there shall in no case be less than 80 cub. ft. of internal space and 8 sq. ft. of internal area for each unit of the number of children in average attendance for which the school is recognized.

The Manchester Society of Architects began its summer programme on April 16th by a visit to the new transit sheds for the ship canal. The sheds are constructed entirely of ferro-concrete on the Hennebique system, the roofs being covered with Limmer asphalt. Mr. Williams, the resident engineer, showed the visitors through sheds in various stages of erection, and the visit was a most instructive one. The next visit, on May 17th, dealt with a very different branch of an architect's work, the members visiting the works of the Pilkington Tile Co. at Clifton Junction. Such a works, seen under the guidance of an enthusiast like Mr. Burton, the manager, shows one something of the wonderful fascination of the potter's craft, and explanations of the various processes, from the raw clay to the very beautiful finished tile or pottery, were listened to with the keenest interest.



DETAIL OF RADLEY COLLEGE TOWER.

Builders' Notes.

"Gas Power and Fuel" is the title of a new monthly issued from 7, Warwick Court, High Holborn, W.C., price 4s. per annum post free.

Mr. John Comerford has been appointed Inspector of Dangerous Buildings for the city of Dublin. There were eleven candidates for the post.

Electric Trams in the North.—Electric trams connecting Stalybridge, Dukinfield, Mossley and Hyde have commenced running. The scheme is estimated to cost £400,000.

Messrs. Jacob Parkinson & Sons, builders and contractors, of Blackpool, have secured the contract for the rebuilding of the Lyceum, London, at a cost of £40,000.

A Block of Residential Flats at Wandsworth, to be called "Ringford House," is to be erected at the corner of Ringford Road and West Hill by Messrs. R. Ward & Son, of Battersea, from the designs of Messrs. Palgrave & Co., of Victoria Street, S.W.

The General Hospital, Tunbridge Wells, is being warmed and ventilated by means of Shorland's patent double-fronted Manchester stoves with descending smoke flues, supplied by Messrs. E. H. Shorland & Brother, of Manchester.

The Building By-laws at Cockermouth are proposed to be revised, as they are considered to be too stringent on builders of small houses. From the "Cockermouth Free Press" we learn that a committee of the urban district council has been appointed to consider the matter.

Harrogate Corporation Contracts.—Considerable discussion has taken place at Harrogate in reference to the insertion of a fair contracts clause in Corporation contracts to ensure the payment of a standard rate of wages to all men employed. The matter has now been left in the hands of the mayor, who is to draw up a clause.

Messrs. J. H. Sankey & Son, Ltd., write correcting the report that the recent fire destroyed their head office at Canning Town; only their glazed brick store at the L. & N.W. railway depot was burnt. The fire has not and will not affect the carrying out of any contracts, nor the execution of orders for glazed bricks or any other goods.

Demand for Increased Wages at Reading: Arbitrator's Award.—The employees in the building trades of Reading recently asked for an advance of wages to plumbers, bricklayers and labourers of a ½d. an hour. The matter was discussed by the Conciliation Board, who, however, failed to agree, and the Board of Trade was asked to appoint an arbitrator. Mr. G. R. Askwith, barrister-at-law, who was appointed, decided that the wages of plumbers and bricklayers should not be increased, but that the labourers should have what they asked, excavators and scaffolders employed in excavating and scaffolding solely to be paid ½d. more per hour than ordinary labourers.

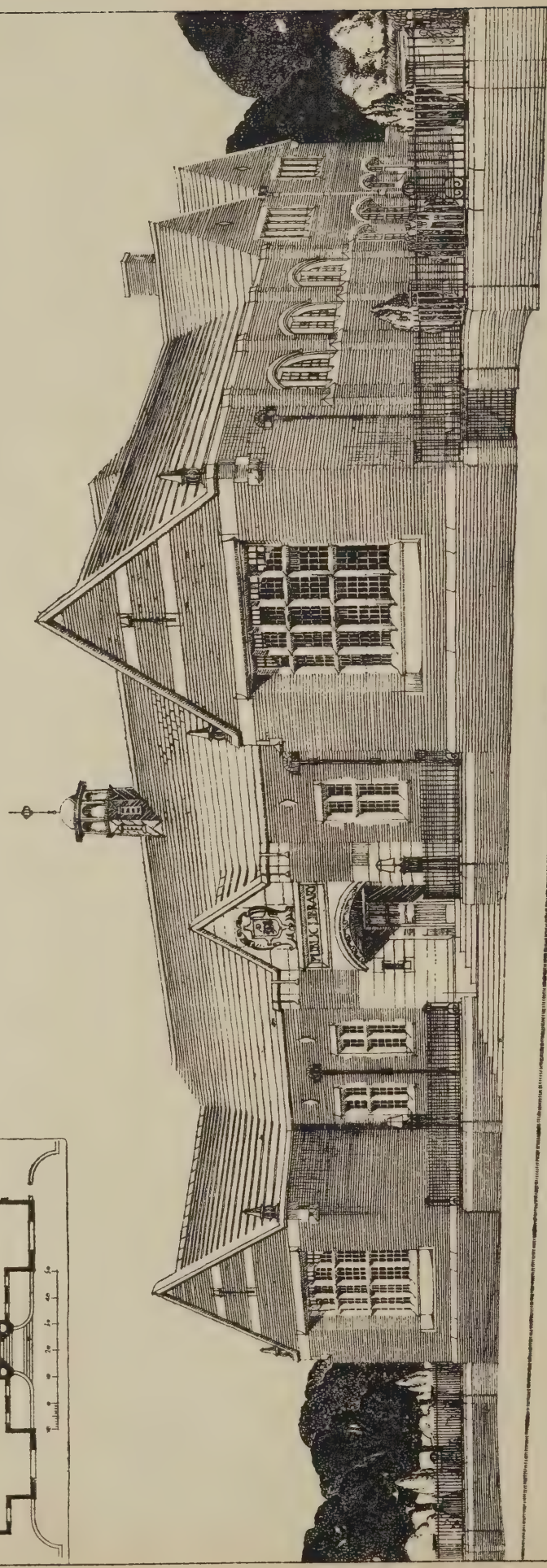
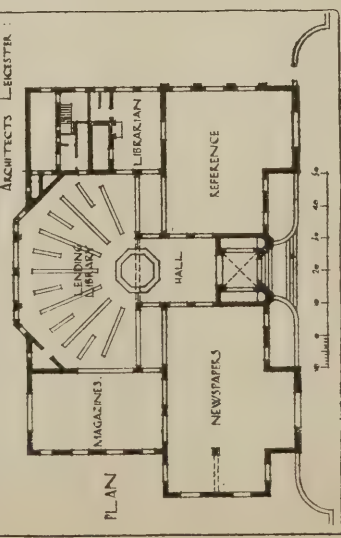
A Dispute at Sheffield has occurred with the masons, affecting about 300 men. The master-builders have recently been endeavouring to get the working rules modified so as (1) to have both setters and masons in the yard or shop paid the same price, and not as at present the former paid ½d. more, (2) to prevent worked stone coming into the town, except flags, steps and landings, so as to prevent undercutting by outside contractors, (3) to remove the stipulation that trades-unionists' sons need not be apprenticed to the trade, and (4) slight alterations in winter working hours. The men, after negotiating, suddenly decided to stick by the old rules, but the masters regard the objections as trifling and hope to avoid a strike.

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Supplement to
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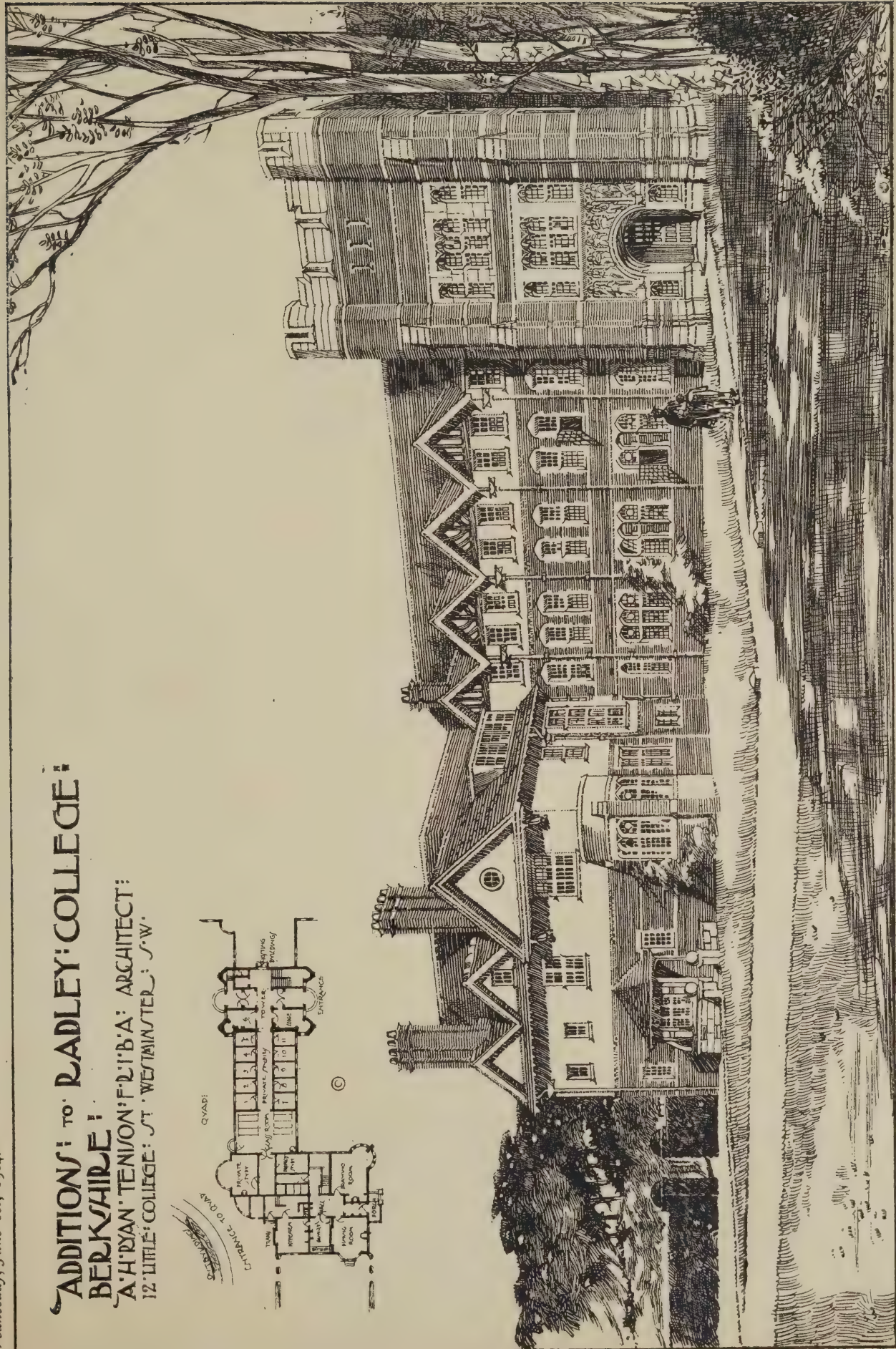
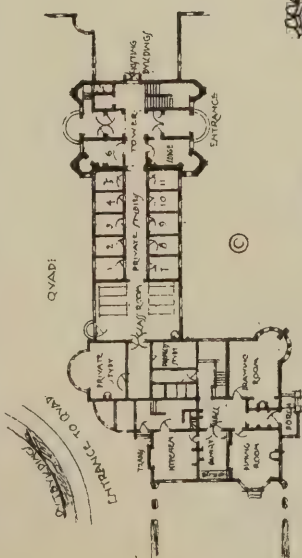


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(ACADEMY, 1904.)

ADDITIONS TO RADLEY COLLEGE, BERKSHIRE.

A. H. DYAN TENISON, F.R.I.B.A., ARCHITECT;
12 LITTLE COLLEGE, ST. WESTMINSTER, S.W.



(ACADEMY, 1904.)

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Correspondence.

Sketching and Measuring in the City Churches.

To the Editor of THE BUILDERS' JOURNAL.

LONDON, W.

SIR,—In reference to the series of articles on the City churches concluded in your issue for May 18th we desire to call attention to the fact that most of the churches are closed on Saturday afternoons. Surely, as this day of the week presents the only opportunity to the architectural student for making a thorough examination of the magnificent work by Wren and others which so many of them contain, it might be arranged that they should be open on that afternoon, if on no other. Of the following fifteen churches which we visited on the afternoon of Saturday, May 14th, only the last three were open:—

St. Benet, Queen Victoria Street; St. Swithin, St. Mary Abchurch, St. Mary Aldermay, St. Michael Royal, St. Clement, St. Magnus the Martyr, St. Mary at Hill, St. Margaret Pattens, St. Peter, Cornhill; St. Mary-le-Bow, St. Martin, Ludgate Hill; St. Edmund King and Martyr, St. Nicholas Cole Abbey, and St. Andrew Wardrobe.

On the doors of most of them there is a notice to the effect that the church is open from 12 to 2 in the afternoon only, during which time it is hardly possible for the ordinary student to visit them. Is there any reason why the authorities of these churches should not follow the example of the Roman Church, on the Continent and in this country, by permitting free access at all hours; and would it be too much to ask the incumbents that they should keep a verger or other attendant to see that no improper use was made of such freedom?

In any case we hope the publication of the above list will save others from a similar disappointment to that we experienced.—

Yours truly, WILFRID I. TRAVERS.
LEON KELSEY.

[We presume the chief reason why the churches are closed on Saturday afternoon is that they are then being cleaned for the services on the following day. Still, they might at least be kept open till 5, as done at several (notably St. Bartholomew the Great and All Hallows, Barking, both of which attract visitors), and it is possible that the incumbents of other churches would follow suit if they expected a sufficient number of visitors to justify the expense incurred. Architectural students can of course obtain a general view of any interior on a Sunday, and the experience of Mr. Mansford, the contributor of the articles in question, is that the incumbents are generally willing to grant special facilities to students who may wish to sketch or measure on Saturdays, provided the caretaker is considered. A few years ago Mr. Mansford compiled a list of the churches with the hours they were open for inspection, and the rules as to sketching and photographing. This has been published several times in the "City Press," and in our own Journal for September 26th, 1900. It cannot be considered quite up to date, but we are not aware of any alteration.—ED. B.J.]

Measuring by Students.

To the Editor of THE BUILDERS' JOURNAL.

SHEFFIELD.

SIR,—In your issue for May 25th I notice that "G. A. T. M." informs "Maryport" that the east window of Carlisle Cathedral would make a most excellent measured drawing. This is no doubt correct, but it is open to question if the subject is one suitable for a young student to attempt when preparing his testimonies of study for the R.I.B.A. intermediate examination. Presumably "Maryport" hails from Carlisle; it is therefore fair to assume that he is acquainted with the east window of the



THE BUILDING OF HOYLE'S WAREHOUSE, MANCHESTER (Photograph taken on May 21st).
CHARLES HEATHCOTE AND SONS, ARCHITECTS.

Special attention is drawn to the advance made in the interior, the brickwork, steel framework and steel flooring joists, also the general advancement of terra-cotta. We shall not publish a photograph in our next issue as the work was practically stopped for the whole of the Whitsuntide week.

cathedral and wished for a subject more within his powers of execution. The size of the window would be sufficient to overpower anyone living near, although it might not be so apparent to "G. A. T. M." Mr. Sharpe in his book on window tracery gives the width as 33ft. and the height as 59ft. 6in., in addition to which the height from the ground to the window-sill must be taken into account if a measured drawing is contemplated. It would be interesting to know how "G. A. T. M." would advise a student to set about the preparation of such a drawing as he suggests; on this point, however, he is silent.

Poor "Maryport"! One can imagine the eagerness with which he looked for the reply to his question and his disappointment on seeing it. It would have been far better if he had enquired from some member of the profession in his own neighbourhood, or even applied to the Manchester, the Northern or the Leeds Architectural Societies, some of whose members would, no doubt, have been willing to advise him from knowledge acquired, not from Rickman's, but from actual experience. I do not wish to disparage the work of "G. A. T. M."; no doubt he does his best with the material at his disposal; still, no one man can be expected to have seen all the old buildings in this country, and book knowledge is not sufficient when advising a student what to sketch or measure. Many of the provincial societies have lists of suitable buildings near their centres prepared for the use of their own younger members, and I have no doubt that these would be placed at the disposal of any bona-fide student from another district. This information would be more reliable than that in many books, as it would deal with the present condition of the various buildings and would show what was left after the "restorations" of recent years.—Yours truly,
JAMES R. WIGFULL.

[Mr. Wigfull is perfectly right in suggesting that provincial enquirers should go to local sources preferably for their information; and he has noticed that in this case I was careful to name my authority, not having personal acquaintance with Carlisle. At the same time, I have known apparently inaccessible

work to be accurately measured, so far as the leading points were concerned, by means of a theodolite, while the plan could be obtained from a ladder, together with enough information about the mouldings for the purpose named. Had Mr. Wigfull supplied the enquirer with a suggestion of something more suitable his letter would have been of even greater value than it is as it now stands.—G. A. T. M.]

Views and Reviews.

Soft Woods.

In this handbook, which is primarily intended to appeal to the average workman, all the various classes of soft woods and Colonial timbers are described succinctly and their uses enumerated. The first chapter describes the growth, structure and defects of trees, and then follows one on seasoning, cutting, sizes and timber terms, a third chapter dealing with the various pines, a fourth with miscellaneous soft woods, and the concluding chapter with Colonial timbers. The book is no novelty, but it is a very cheap little publication.

"Soft Woods and Colonial Timbers," by Percy A. Wells. London: Percival Marshall & Co., 26-29, Poppin's Court, Fleet Street, price 6d. nett.

Rothwell Church.

Fragmentary descriptions of Rothwell Church have been published at one time and another, but nothing at all complete, so that Mr. Cayley had good reason for writing this pamphlet, after carefully studying the building for seven months. There appear to be no mediæval documents relating to the church, and the statements made as to the dates of the several parts—with the exception of those in the nineteenth century and some in the seventeenth and eighteenth—are based on personal observation. Of Norman work remaining there is a range of five windows on the south side of the chancel; the nave and aisles, the lower stages of the western tower and the crossing and transepts being Early English and Transitional. In early Decorated times, perhaps about 1300, the plan of the building was completed by the lengthening of the chancel to form the

sanctuary, and it is probable that during the latter half of the fourteenth century the tower was raised to its present height on the massive Transitional sub-structure. Alterations to various parts of the church were made during the Perpendicular period, but nothing is recorded of the seventeenth century except that the spire collapsed in 1660 and the transepts were taken down in 1673. In the eighteenth century no fresh work of importance was carried out; a century later, however, the restorers were busy, though in 1894 a comprehensive scheme prepared by the late Sir Arthur Blomfield was undertaken and has since been mostly completed: it is intended to go on with this scheme, the chief works remaining to be done being the erection of a new roof over the nave and the opening out of the tower arch. Funds are now being raised for that purpose. The book is illustrated by a plan and exterior and interior views of the church.

"Holy Trinity Church, Rothwell, Northamptonshire," by H. Cayley, M.A., A.R.I.B.A. Kettering: W. E. & J. Goss, price 6d.

Masonry.

We fear this is the sort of book that will eventually find its way on to the second-hand bookstall. The subject is an old one and is here dealt with in the familiar historical manner, illustrated by a number of photographic reproductions. It forms interesting reading enough, but there is nothing really comprehensive about it and the chapters headed "bits" of masonry are not impressive. The get-up of the book is by no means attractive.

"The Art of Masonry in Britain," by William Diack. London: "Stone Trades Journal," 36, 37 and 38, Southampton Street, Strand.

English Land.

The first edition of this book, issued last January, remains intact in the opening fifty-five pages of the present second edition, the two together numbering 224 pages. There is nothing in it of use to the architect, but the land surveyor may find something to interest him among the miscellaneous collection of remarks.

"Buy English Acres," by C. F. Dowsett, F.S.I. Published by the author at Winklebury, Basingstoke, Hampshire, price 3s. 6d. post free.

Heating.

The fact that this book has now gone into three editions, the first consisting of 2,500 copies and the second of 5,000 copies, is sufficient evidence of its worth. Continual improvement has to be recorded. Beginning with 120 pages, enlarged to 220 pages, with pages 7in. by 5in., the book has now been increased to 360 pages 9in. by 6in. The success of the book may be traced to the fact that the author, as head of the firm of Jones & Attwood, the well-known heating specialists, of Stourbridge, has had an exceptionally wide experience. Mr. Jones says in his preface that the book has not been written for profit but for love of the work, and he is deserving of all praise for his disinterestedness and display of public spirit, while the building trade may consider itself fortunate in thus being given the results of thirty years' constant daily experience. The author is not prejudiced in favour of any one system of heating; he recognizes points in favour of each, and admits there are circumstances and conditions where each may be most suitable, and that not one of them will fulfil all the conditions required for the multifarious phases of artificial heating. The systems discussed are:—Hot air, steam, high-pressure and low-pressure hot-water. He declares, however, in favour of the low-pressure hot-water system for ordinary temperatures of 60 degs. to 70 degs. for churches, schools, public buildings, dwelling-houses and offices; for he says there is no system which has greater advantages and fewer disadvantages, especially when used with a proper

system of ventilation, introducing the air through direct or indirect radiators. By low pressure an even, equable and humid temperature can be maintained, the heat distributed, regulated and controlled with better effect and with less fuel, and it is easy of manipulation and delicate adjustment. But he is quite convinced that for large and scattered blocks, lofty buildings, hospitals and large factories steam heating is preferable. The forms of steam heating in vogue Mr. Jones classifies as (1) high pressure, say 20lbs. to 80lbs., where the condensed steam is collected by means of steam traps and then pumped into the boiler; (2) medium pressure, say 5lbs. to 20lbs., where the condensed steam is returned either by return steam traps or pumped back to the boiler; (3) steam gravity, say 1lb. to 5lb. pressure, where the steam returns as it condenses by its own gravity to the boiler, which is usually placed below the level of the mains, distributing pipes and radiators; (4) steam gravity (low pressure) with open pipes (Continental method), the chief characteristics of which are very low pressure, small-bore pipes, absence of air valves and reduced cost of apparatus; (5) vacuum systems, with steam at or below atmospheric pressure; and (6) exhaust steam, utilizing the waste steam from existing engines. It is impossible for us to follow the author closely through all the many points of original research and enlightening criticism of the various methods of practice. The book is crammed with information indispensable to the heating trades. It is profusely illustrated and has a number of time-saving tables. Algebraic or mathematical calculations that the average engineer would not understand are avoided. The chapters on each branch of the subject are short, and this enables the principles to be grasped gradually and unfatiguingly. The chapters on radiation are very valuable, as they embody much original research. The chapter devoted to ventilation only touches the fringe of the subject, though Mr. Jones condemns the "natural" system and declares unhesitatingly in favour of mechanical ventilation. The book should be in the hands of everyone who has to deal directly with the heating of buildings.

"Heating by Hot-Water, Ventilation and Hot-Water Supply," by Walter Jones, M.I.M.E. London: Crosby Lockwood & Son, 7, Stationers' Hall Court, Ludgate Hill, E.C., price 6s. nett.

Coming Events.

Wednesday, June 1.

GLASGOW ARCHITECTURAL ASSOCIATION.—Business Meeting at 8 p.m.

ROYAL ARCHÆOLOGICAL INSTITUTE.—Mr. C. R. Peers, M.A., F.R.S., on "The White Monastery near Sohag, Upper Egypt." Mr P. N. Johnston on "The Wall Paintings in Shorthampton Church, Oxfordshire," 4 p.m.

BUILDERS' FOREMEN'S AND CLERKS OF WORKS' INSTITUTION.—Ordinary Meeting of the Members at 8 p.m.

Thursday, June 2.

CHEMICAL SOCIETY.—Ordinary Meeting at 8 p.m.

Friday, June 3.

ROYAL INSTITUTION.—Prof. Svant Arrhenius, of Copenhagen, on "The Development of the Theory of Electrolytic Dissociation," 9 p.m.

ARTISTS' BENEVOLENT FUND.—Annual Dinner at the Hotel Cecil.

GEOLOGISTS' ASSOCIATION.—Meeting, University College, Gower Street, at 8 p.m.

Saturday, June 4.

BRITISH INSTITUTE OF CERTIFIED CARPENTERS.—Annual Dinner at the Holborn Restaurant at 7 p.m.

NORTHERN ARCHITECTURAL ASSOCIATION.—Visit to West Hartlepool.

INSTITUTE OF SANITARY ENGINEERS.—Visit to new buildings of University College Hospital, Gower Street, W.C., at 3 p.m.

Monday, June 6.

SOCIETY OF ENGINEERS.—Ordinary Meeting at 7.30 p.m.

Wednesday, June 8.

GEOLOGICAL SOCIETY.—Meeting at 8 p.m.

Trade and Craft.

Canadian Veneered Doors.

Veneering is a time-honoured practice in cabinet-making, and the advantages it offers are so well-known and so indisputable that it would be superfluous on our part to dilate on them. It is surprising that in this country veneering should be so little used in joinery. Presumably architects are afraid of its lasting qualities, afraid it will detach by reason of damp or heat, and especially afraid it will blister in parts. The great saving in cost made possible by the use of veneer for panelling and doors, and the opportunities for decoration with the most beautiful and expensive woods in ordinary buildings, are self-evident, and they have now been rendered available by the constructive methods employed by the Gilmour Door Co., Ltd., of Trenton, Canada; and in addition, by their system the framing is stronger and warping and twisting cannot occur. The veneering is done by cutting a number of grooves all over the core and correspondingly tonguing the veneer; these grooves are not dovetailed, but fit so tightly that great pressure is required to force them together. The mouldings are put on in much the same way. The core is formed of small pieces of wood, each placed so that the grain is opposite to that adjoining: this makes it impossible for the doors to warp or twist, and every architect who has had to deal with solid hardwood doors will realize the supreme importance of this point. All the materials are pressed and rolled together so tightly that were no glue employed it would be impossible to separate the facing from the core. The glue is waterproof. The panels are formed of thin sheets of wood, and are constructed five-ply, the grains alternating as in the core. A veneered panel is practically indestructible and is the only panel impervious to heat or moisture and independent of temperature. The stiles, rails, muntins and panels are framed together much as in ordinary doors, the grain of the core running the same way as in time-honoured joinery. The materials used in the construction of these doors are thoroughly seasoned and kiln-dried, and the experience of numerous architects testifies to their reliability. The doors are veneered in all their parts, on the edges and elsewhere, and are much cheaper than solid hardwood doors, while better in quality and possessing greater beauty in the veneer. English architects must not suppose because veneered doors are an innovation in this country that they are new and untried. It must be realized that such doors have been used for ten years or more, the form of construction being gradual in its development, evolved to fit the alternating conditions of America as regards exposure to severe cold, damp, dryness, the heating required in winter, &c., which were found to make the solid door an unreliable and unsightly nuisance. The Gilmour Door Co. keep a large number of doors of different design and sizes in stock, which should suit all ordinary requirements, but as their capacity is 500 doors per day, any order to a different design, and with special mouldings, can be promptly executed, for it only takes a few weeks to bring them over from Canada, long before a job would be far advanced; or special mouldings could be fixed here. The doors are finished to exact widths, thus saving the expense of fitting when jambs are correctly set. The general agents in this country are Messrs. Walcot Ltd., 17, Gracechurch Street, London, and doors are also kept in stock by Messrs. Arthur Sanderson & Sons, Ltd., 52, Berners Street, London W.; J. E. Beard & Co., Ltd., 10, South Castle Street, Liverpool; Felber, Jucker & Co., 29, Peter Street, Manchester; W. T. Wallace, Northumberland Road, Newcastle-on-Tyne; and Fox, Elliott & Co., Ltd., Plymouth.

Rainwater Pipe Heads.

We have received from Messrs. Lockerbie & Wilkinson, Ltd., of Station Street, Birmingham, and 109, Victoria Street, London, S.W., a most interesting catalogue of rainwater heads, pipes, gutters and sundry other ornamental ironwork. The catalogue is excellently printed, and the fulness with which all sizes and prices are given should make it a valuable book of reference for the architect. Perhaps the most interesting features, so far as novelty goes, are the new patterns of iron rainwater pipes with plain and artistic sockets and ears to take the place of the ordinary stock-pattern pipe. It is remarkable that no maker has hitherto attempted to produce an artistic rainwater pipe of ordinary weight and at a cost only slightly more than the ordinary stock-pattern pipe, for it will be generally agreed that the shallowness of the ordinary socket, the meagreness of the O.G. mouldings on it and the insignificance of the little cast-on ears make it as unattractive a feature on the front of a building as can be imagined. Ornamental iron pipes have of course been made before, but in special heavy weights and at such prices as prohibit their use on ordinary buildings; whereas the new "Lockerbie" pipes, here illustrated, are sold at a price which should make them available for any building. Another refreshing change from the ordinary stock pattern is a simple cable-moulded box-shaped head (illustrated in this column) which can be had with seven alternative ornaments on the face; it is supplied at 5s. 6d. to suit pipes of any size, either lying flat on the wall or projecting 1½ in. Of the fifty rainwater heads shown in the catalogue many are designs by well-known

architects. For the first time rainwater gutters are shown with a full list of prices under each illustration, which enables an

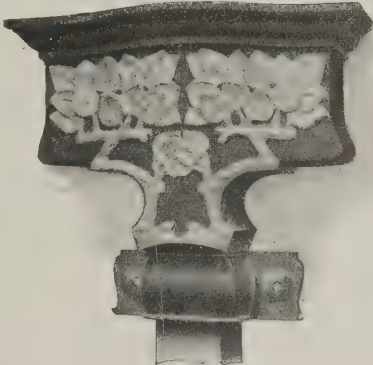
excellent designs Messrs. Lockerbie & Wilkinson are producing. It is noteworthy that in preparing this catalogue they have had the



L4469. 8/6

architect when specifying to see the comparative cost of different patterns. There are also illustrations of well-designed and simple wrought-iron railings which have been made for various important buildings,

L4474. 22/6



and the fact that all the illustrations are from photographs makes the catalogue one of special value. The illustrations here given (including one of a head designed by Mr. Harrison Townsend—L 4474) show what



assistance of Mr. Lawrence Weaver, their London representative, whose architectural knowledge of the subject has been of very great value.

New Companies.

- SPRAGUE ELEVATOR CO., LTD.** Capital: £5,000 in £1 shares.
- ELLIS, PARTRIDGE & CO., LTD.**, slate and timber merchants, brickmakers, &c., Leicester. Capital: £60,000 in £1 shares.
- BANKS' HELICAL FIREPROOFING SYSTEM, LTD**, 71A, Queen Victoria Street, E.C. Capital: £10,000 in £1 shares.
- JOHN HERRING & CO., LTD.**, timber merchants, Old Mansion House, Close, Newcastle-upon-Tyne: Capital: £25,000 in £1 shares.
- WARING WHITE BUILDING CO., LTD.**, to adopt an agreement with Waring & Gillow, Ltd., and carry on the business of preparers of land for building purposes, builders, &c. Capital: £100,000 in £1 shares.

Complete List of Contracs Open.

DATE OF DELIVERY		WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
BUILDING:				
June	2	Rawtenstall, Lancs—Library	Corporation	J. Johnson, Borough Surveyor, Municipal Offices, Rawtenstall.
"	2	Penrhiwceiber, Wales—Lime and Cement	Penrhyber Navigation Colliery Co., Ltd.	Secretary, Company's Offices, Penrhiwceiber, R.S.O., Glam.
"	2	Ballclough, Mallow, Ireland—Dispensary Residence	Guardians	M. Regan, Clerk, Workhouse, Ballclough, Mallow, Ireland.
"	2	Portluc, Cornwall—Rebuilding Inn	—	T. H. Andrew, 1 Trevarrick Villas Street, Anstell.
"	2	Reepham, Norfolk—School, &c.	—	Mr. Gibbs, Ironmonger, Reepham, Norfolk.
"	3	Anfield Plain, Durham—Alterations, &c., to Branches (two contracts)	Industrial Co-oper. Society, Ltd.	G. T. Wilson, Architect, 21 Durham Road, Blackhill.
"	3	Hebburn-on-Tyne—Chancel	—	W. Mitchell, Post Office, Willington Quay.
"	3	Selkirk—Walls, &c.	Selkirk Parish Council	G. S. Carfrae, 1 Erskine Place, Edinburgh.
"	3	Barnard Castle—Alterations and Additions	—	T. Farrow, Architect, Barnard Castle.
"	3	Muker, near Richmond, Yorks—Bridge	Reeth Rural District Council	T. Brown, Surveyor, Low Road, Richmond, Yorks.
"	3	Gloucester—Workshops, &c.	Gaslight Co.,	W. B. Wood, Architect, Gloucester.
"	4	Cockermouth—Villa	—	J. Flemings, 2 Corn Market, Cockermouth.
"	4	Welwyn, Herts—Mortuary, &c.	Guardians	Workhouse, Welwyn.
"	4	Teddington—Public Library	Urban District Council	H. A. Cheers, 35 Waldegrave Park, Twickenham.
"	4	Lichfield—Houses, &c.	Trustees, Milley's Hospital	W. Perry, 34-41 Bare Street, Lichfield.
"	4	Northwich—Repairs, &c.	Moulton Council	A. E. Thomas, Verdin Technical Schools, Northwich.
"	4	Brynawr—Rebuilding, &c., Three Hotels	Buchanan & Co.	T. Roderick, Architect, Glebeland, Merthyr Tydfil.
"	4	Blackwood, Newport, Mon—Repairing Inn	E. E. Bevan	T. Roderick, Architect, Glebeland, Merthyr Tydfil.
"	4	Melincrythan, Wales—Rebuilding	Hospital	J. C. Rees, Architect, Neath.
"	6	Gravesend—Alterations, &c., to Hospital	—	Secretary, Hospital, Gravesend.
"	6	Monkton, Devon—Alterations, &c., to Court Hall	Parish Council	E. Harbottle & Son, Architects, County Chambers, Exeter.
"	6	Radcliffe-on-Trent—Walls, Drainage, &c., to Cemetery	Visiting Committee	Calvert & Gleave, Architects, 18 Low Pavement, Nottingham.
"	6	Papsbury, near St. Albans—Alterations	Staffordshire C.C. Education Committee	Young & Brown, 104 High Holborn, W.C.
"	6	Sedgley—Repairs, &c.	—	T. J. Howitt, Queen Victoria Schools, Sedgley.
"	6	St. Abbs, Scotland—House	Education Committee	E. K. Carmichael, Architect, 14 Queen Street, Edinburgh.
"	7	Mountain Ash, Wales—Alterations, &c.	—	A. O. Evans, Architect and Surveyor, Post Office Chambers, Pontypridd.
"	7	Boldon, Durham—Extensions, &c., to Central Premises	Industrial Co-oper. Society	Vaux & Mark, Architects, 66 John Street, Sunderland.
"	7	Croydon—County Court	Commissioners of H.M. Works, &c.	Collector, Inland Revenue Office, Croydon.
"	7	Egremont, Cumberland—Alterations, &c., to Church	—	J. Cowan, Architect and Surveyor, Egremont, Cumberland.
"	7	St. Enoder, Cornwall—Farmhouse	—	Executors of T. Siddicat, Farmhouse, Ebury Row.
"	7	Blackpool—Six Cottages, &c.	Fylde Water Board	Fylde Water Board, 34 Victoria Street, Blackpool.
"	8	Edmonton—Raising an Additional Storey	Guardians	T. E. Knightly, 106 Cannon Street, E.C.
"	8	Handsworth, Staffs—Generating Station	Urban District Council	H. Ward, The Council House, Handsworth, Staffs.
"	8	Sherburn Hill, Durham—Additions to Stores	Co-operative Society, Ltd.	J. W. Taylor, Architect, St. John Street, Newcastle.
"	9	Carnkie, near Redruth—Church	Trustees, Wesleyan Methodist Congregation	S. Hill, Architect, Green Lane, Redruth.
"	9	Leicester—Pumping Station,	Sewage Works and Farms Committee	E. G. Mawbey, Borough Engineer, Town Hall, Leicester.
"	9	Penzance—Hospital and Dispensary	—	O. Caldwell, Architect, Victoria Square, Penzance.
"	10	Leven, Fife—Two Cottages, Outbuildings, &c.	Admiralty	Superintending Engineer, H.M. Naval Establishment, Rosyth, near Inverkeithing.

Complete List of Contracts Open—continued

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
BUILDING—cont.			
June 10	Plymouth—Sliding Partitions	Urban District Council	E. C. Cook, 18 Princess Square, Plymouth.
" 11	Mitchell, Cornwall—Enlargement of Church	War Office	S. Hill, Architect Green Lane, Redruth.
" 11	Stainland, Yorks—Eight Houses	County Council	C. F. L. Horsfall & Son, Architects, Lord St. Chambers, Stainland.
" 13	Erith, Kent—Additions to Electric Light Station	Urban District Council	W. Egerton, 12 Queen's Road, Erith, Kent.
" 13	Caterham, Croydon, &c.—Repairs and Materials	County Council	Royal Engineers' Office, 41 Charing Cross, London, S.W.
" 13	Erith—Bridge	Corporation	Hawtayne & Teden, 9 Queen Street Place, London, E.C.
" 14	East Peckham—Reconstruction of Three Bridges	Urban District Council	F. W. Kuck, County Architect, Maidstone.
" 14	Southend-on-Sea—Additions to Schools	Urban District Council	W. H. Snow, Town Clerk, Southend-on-Sea.
" 14	Southall—Decorating and Heating at Public Offices	London County Council	R. Brown, Engineer and Surveyor, Public Offices, Southall
" 14	London, S.W.—Balcony Dwellings	Trustees, English Wesleyan Ch.	Architect's Dept. (Housing Section), 19 Charing Cross Road, W.C.
" 16	Aberdare—Schoolrooms	Committee, Workmen's Library	J. L. Smith & Davies, Architects, Aberdare.
" 16	Rhymney, Mon—Library, &c.	Admiralty	J. L. Smith & Davies, Architects, Aberdare.
" 17	Speeton—Houses, &c.	Admiralty	Director of Works Department, Admiralty, 21 Northumberland Avenue, London, W.C.
" 17	South Devon—Houses, &c.	Rural District Council	Superintending Civil Engineer, H.M. Dockyard, Devonport.
" 20	Rhydyllwyfar, Abergavenny—Bridge	Urban District Council	J. Gill, Surveyor, 4 Brecon Road, Rhydyllwyfar
" 23	Wimbledon—Enlargement of Schools	County Council	R. H. S. Butterworth, Council Offices, Wimbledon, S.W.
" 24	Galway—Extension of Pier, Breakwater, &c.		H. Williams, Offices of Public Works, Dublin.
July 23	Rio-de-Janeiro—Theatre		Commercial Intell. Branch, Board of Trade, 50 Parliament St., S.W.
ENGINEERING:			
June 2	Penrhiwceiber, Wales—Electric Lamps and Fittings.. .. .	Penrhykber Navigation Colliery Co., Ltd.	Secretary, Company's Offices, Penrhiwceiber, R.S.O., Glam.
" 3	Rochester—Electric Tramway	Corporation	E. Rotter, Engineer, 47 Victoria Street, Westminster, S.W.
" 4	Pontypridd—Motors	Urban District Council	R. P. Wilson, 66 Victoria Street, Westminster, S.W.
" 4	Manchester—Two Cyclone Dust Collecting Plants	Tramways Committee	J. M. McElroy, 55 Piccadilly, Manchester.
" 6	Epsom—Mainlaying	Urban District Council	W. V. Graham, 8 Queen Anne's Gate, Westminster.
" 6	Larne, Ireland—Extending Water Supply	Urban District Council	J. H. H. Swiney, Engineer, Avenue Chambers, Belfast
" 6	Dinnington—Sidings and Works	South Yorkshire Joint Line Committee	R. E. Cooper, 8 The Sanctuary, Westminster, S.W.
" 6	Sheffield—Gasholder	United Gaslight Co.	J. W. Morrison, Company's Engineer, Commercial St., Sheffield.
" 7	Bury—Heating	Tramways Committee	A. W. Bradley, Borough Engineer and Surveyor, Bury.
" 7	Carlisle—Waterworks	Corporation	J. Mansergh & Sons, 5 Victoria Street, Westminster, S.W.
" 7	London, S.W.—Repairing Bridge	London County Council	Engineer's Department, County Hall, Spring Gardens S.W.
" 7	North Shields—Culvert	Corporation	J. F. Smilie, Borough Surveyor, Tynemouth.
" 7	Tynemouth—Storm-Water Culvert	Corporation	J. F. Smilie, Borough Surveyor, Tynemouth.
" 7	Stirchley, Birmingham—Well, &c.	Urban District Council	A. W. Cross, 23 Valentine Road, King's Heath, Stirchley.
" 8	Dewsbury—Boiler	Corporation	R. H. Campion, Borough Elec. Engr., Bradford Road, Dewsbury.
" 8	Truro—Sea Wall	River Committee	M. Lea, City Surveyor, Truro.
" 9	Exeter—Tramways	Corporation	J. E. Waller, 29 Great George Street, Westminster.
" 10	Ryde, Isle of Wight—Reconstruction of Pier	Pier Committee	T. R. Saunders, Belgrave Chambers, Ventnor
" 13	Brockweir, Chepstow—Bridge	Bridge Committee	S. W. & A. L. Yockney, 53 Victoria Street, Westminster.
" 13	Edinburgh—Boilers	Gas Commissioners	W. R. Herring, Chief Engineer, New Street Works, Edinburgh.
" 13	Erith, Kent—Bridge	Urban District Council	C. H. Fry, Clerk, Erith.
" 14	London, S.W.—Coal and Ash Conveyors	London County Council	Clerk to the Council, County Hall, Spring Gardens, S.W.
" 15	Winchester—Additions to Sewage Pumping Station, &c.	Town Council	City Surveyor, Guildhall, Winchester.
" 20	Ashford, Kent—Steam Road Roller	Rural District Council	H. Hamilton, Clerk, 11 Bank Street, Ashford, Kent.
" 20	West Ham—Electric Wiring	Educational Committee	W. Jacques, Architect, 2 Fen Court, Fenchurch Street, E.C.
" 21	Nottingham—Reservoirs	Water Committee	S. Moore, Water Offices, St. Peter's Square, Nottingham.
July 4	Johannesburg—Cables, &c.	Municipal Tramways & Electric Supply	Nordest & Dawbarn, 82 Victoria Street, S.W.
" 30	Shanghai, China—Electric Tramways	Municipal Council	J. Pook & Co., 63 Leadenhall Street, London, E.C.
August 1	Calcutta—Water-Meter Testing Apparatus	Corporation	Engineer to the Corporation, 2 Municipal Office Street, Calcutta.
IRON AND STEEL:			
June 2	Penrhiwceiber, Wales—Stores	Penrhykber Navigation Colliery Co., Ltd.	Secretary, Company's Offices, Penrhiwceiber, R.S.O., Glam.
" 6	Pontypridd—Stores	Gas Committee	E. Jones, Gas Engineer, Gasworks, Treforest, near Pontypridd.
" 6	Southampton—Rails	Corporation	J. A. Crowther, Engineer, Municipal Offices, Southampton.
" 6	Blackpool—Pipes, &c.	Fylde Water Board	W. Wearing, 34 Victoria Street, Blackpool.
" 6	London, E.C.—Bridge Work	Burma Railway Co.	Burma Railway Co., 76 Gresham House, Old Broad Street, E.C.
" 6	London, E.C.—Girder Bridges	Bengal and North-Western Railway Co., Ltd.	Secretary, 237 Gresham House, Old Broad Street, E.C.
" 6	Southampton—Crossings, &c.	Corporation	J. A. Crowther, Borough Engineer, Municipal Offices, Southampton
" 14	Wrexham—110 Sheep Pens.. .. .	Town Council	Borough Surveyor's Office, Willow Road, Wrexham.
PAINTING AND PLUMBING:			
June 2	Penrhiwceiber, Wales—Paints, &c.	Penrhykber Navigation Colliery Co., Ltd.	Secretary, Company's Offices, Penrhiwceiber, R.S.O., Glam.
" 3	Bootle, Lancs—Painting	Corporation	Borough Engineer's Office, Town Hall, Bootle.
" 6	Pontypridd—Lead and Compo, &c.	Gas Committee	E. Jones, Gas Engineer, Gasworks, Treforest, near Pontypridd.
" 6	Warrington—Whitewashing	Markets Committee	Borough Surveyor, Town Hall, Warrington.
" 20	West Ham—Painting, &c.	Educational Committee	W. Jacques, Architect, 2 Fen Court, Fenchurch Street, E.C.
" 21	London, E.C.—Painting, &c.	Shoreditch Borough Council	J. R. Dixon, Borough Surveyor, Town Hall, Shoreditch.
ROADS AND CARTAGE:			
June 2	Hampton, Middlesex—Making-up	Urban District Council	S. H. Chambers, Surveyor, Public Offices, Hampton, Middlesex.
" 3	Branksome, Dorset—Granite	Urban District Council	S. J. Newman, Council Chambers, Branksome, Parkstone, R.S.O.
" 6	Fareham—Materials	Rural District Council	Union Offices, West Street, Fareham.
" 6	Kettering—Tar Paving, &c.	Rural District Council	H. Porwood, Surveyor, 11 Bowling Green Avenue, Kettering.

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DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
ROADS AND CARTAGE—cont.			
June 6	Leeds—Road Materials	Rural District Council	J. H. Ford, Poor Law Offices, Leeds.
" 7	London, N.—Making-up	Tottenham R.D.C.	W. H. Prescott, Engineer, 712 High Road, Tottenham.
" 7	Thames Ditton—Road Making	Urban District Council	A. J. Henderson, Engineer and Surveyor, Thames Ditton.
" 7	Bootle, Lancs—Improvement Works	Corporation	Borough Engineer's Office, Bootle, Lancs.
" 7	Leyton, Essex—Making-up	Urban District Council	W. Dawson, Surveyor, Town Hall, Leyton.
" 7	London, N.—Tar and Asphalt Paving Repairs	Tottenham U.D.C.	W. H. Prescott, Engineer, 712 High Road, Tottenham.
" 7	London, N.—Paving	Islington Borough Council	J. P. Barber, Engineer, Town Hall, Upper Street, N.
" 7	Tottenham—Making-up	Urban District Council	W. H. Prescott, Engineer, Coombes Croft House, 712 High Road, Tottenham.
" 7	Tottenham—Inverting, &c.	Urban District Council	W. H. Prescott, Engineer, Coombes Croft House, 712 High Road, Tottenham.
" 8	Raunds, Northants—Materials	Urban District Council	T. Yorke, Engineer, Raunds, Northants.
" 13	Wickham Market, Suffolk—Granite, &c.	Plomesgate R.D.C.	T. W. Read, Workhouse, Wickham Market, Suffolk.
" 15	London, S.W.—Making-up	Fulham Borough Council	F. Wood, Borough Surveyor, Town Hall, Fulham, S.W.
" 17	Preston, Lancs—Levelling, &c.	Corporation	Borough Surveyor, Town Hall, Preston, Lancs.
" 24	Lavenshulme, Lancs—Street Works	Urban District Council	J. Jepson, Surveyor, Guardian Chambers, Tiviot Dale, Stockport.
SANITARY:			
June 2	Blaydon-on-Tyne—Scavenging	Urban District Council	R. Biggins, Sanitary Inspector, Council Offices, Blaydon-on-Tyne.
" 2	Kingston-upon-Thames—Surface-Water Drains	Corporation	Borough Surveyor, Municipal Offices, Kingston-on-Thames.
" 3	Bexley Heath—Drainage	Asylums Committee	M. Atlee, Warder, Foresters Asylum, May Place Road, Bexley Heath.
" 4	Sleetburn, Durham—Sewer	Urban District Council	Surveyor's Office, High Street, Langley Moor.
" 4	Brandon Colliery and Littleburn, Durham—Sewer	Urban District Council	J. E. Parker, Engineer, Post Office Chambers, Newcastle-on-Tyne.
" 6	Pontypridd—Lime	Gas Committee	E. Jones, Gas Engineer, Gasworks, Treforest, near Pontypridd.
" 6	Reigate—Sewage-Disposal	County Council	Borough Engineer, Municipal Buildings, Reigate.
" 7	Leyton, Essex—Sewer	Urban District Council	W. Dawson, Town Hall, Leyton, Essex.
" 8	Seghill, Northumberland—Removal of Ashes, &c.	Urban District Council	T. Spencer, Clerk, Seghill, Northumberland.
" 9	Hurst, near Ashton-under-Lyne—Converting Closets	Urban District Council	Inspector of Nuisances, Council Offices, King Street, Hurst.
" 11	Clitheroe—Scavenging	Rural District Council	J. Eastham, Clerk, Clitheroe.
" 11	Lochnaben—Sewerage Works	Town Council	D. Balfour & Son, 3 St. Nicholas Buildings, Newcastle-on-Tyne.
" 13	Thames Ditton, Surrey—Main Drainage Works	Urban District Council	A. J. Henderson, Engineer, Council Offices, Portsmouth Road, Thames Ditton.
" 20	Hastings—Drainage Work	Education Committee	C. A. Pigott, Architect, Saxon Chambers, London Rd., St. Leonards.
TIMBER:			
June 2	Penrhiwceiber—Timber	Penrhiwceiber Navigation Colliery Co., Ltd.	Secretary, Company's Offices, Penrhiwceiber, R.S.O., Glam.
" 4	South Hetton, Sunderland—Timber	Coal Co.	J. R. Lambert, South Hetton, Sunderland.
" 6	Ventnor, Isle of Wight—Timber Groyne	Urban District Council	E. J. Harvey, Surveyor to the Council, Town Hall, Ventnor.

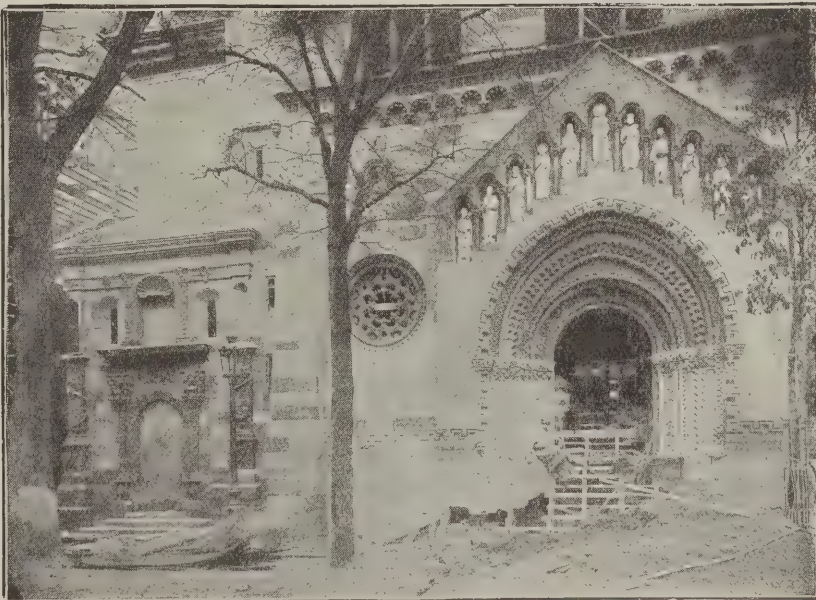
List of Competitions Open.

DATE OF DELIVERY.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	DEPOSIT REQUIRED FOR CONDITIONS, &c.	FROM WHOM PARTICULARS MAY BE OBTAINED.
June 30	Peterborough—Library	£50, £25, £15.	£1	W. Mellows, Town Clerk, Peterborough.
July 2	Bury St. Edmunds—Alterations to Shire Hall	£50, £30, £20.	£1	A. A. Hunt, County Architect, Sudbury, Suffolk.
" 30	Aberystwyth—Public Library	£30, £15.	£1 is.	A. J. Hughes, Town Clerk, Aberystwyth.

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Advertising Notes.

An advertisement is an effective salesman. When you use an advertisement you know just what it says: when you send out an agent, you never know what he has promised in your name. Think this over. The longer you think it over, the truer it will get.

Appointments Wanted.

The charge for Advertisements under this heading is 1s. 6d. per insertion not exceeding four lines, and 6d. per line afterward, prepaid. Three insertions may be had for the price of two. Advertisements must reach the Office not later than 5 o'clock on Monday.

A YOUTH, fond of drawing and passed London Matric, in arithmetic, algebra, and geometry, seeks CLERKSHIP in Architect, Surveyor's, or Builder's office.—A. G., "Wilton," Hamilton Road, Sidcup. 383

A DVERTISER desires ENGAGEMENT in a Sanitary Engineer or Surveyor's Office in London; had experience in inspection and testing of drains, and superintending works, now engaged in Architectural and Surveying Works. Holds Sanitary Diploma.—Box 410, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

A N ARCHITECT is prepared to get out practical Artistic Designs and Working Drawings and details for moderate inclusive fee. Approval in pencil.—DAWES, 24, Charles Road, St. Leonards. 398

A N ARCHITECT with spare time is willing to render assistance in his own office in the preparation of perspectives, designs, working drawings, quantities, &c.—CHAS. CARTER, M.S.A., Sherwood Lodge, Nottingham. 386

A N IMPROVER in the Building Trade seeks situation as time-keeper, or to assist in joiner's shop. Early riser. Good references.—Address G. F., Wingland Grange, King's Lynn. 382

A RCHITECT and SURVEYOR'S ASSISTANT desires RE-ENGAGEMENT. Seven years' experience. Excellent references. Good knowledge of quantities and specifications. Salary £2.—H. P. S., 76, Tremadoc Road, Clapham, S.W. 391

A RCHITECT and SURVEYOR'S EXPERIENCED ASSISTANT, age 25, over nine years in good offices, desires ENGAGEMENT. Thorough good all-round man. Excellent testimonials.—Uno., The Close, Grassmoor, Chesterfield. 416

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A RCHITECT, SURVEYOR & ESTATE AGENT'S ASSISTANT, M.S.A., age 26. Experience 10 years, working and detail drawings, specifications, quantities, surveying and levelling; wants position in large country Estate Office; or chief assistant with view to permanency. Reference first class. Salary 50/- per week.—ALEXANDER DRAKE ALLEN, Moss Vicarage, Doncaster. 392

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Premiums of £50, £30, and £20 are offered for the three best sets of Designs.

Particulars may be obtained on application to the undersigned, who will provide a plan of the site, and instructions upon receipt of a deposit of £1, which will be returned on receipt of bona-fide Design, or if the plan and instructions are returned within seven days.

The premiated Designs will become the absolute property of the Committee.

Designs to be delivered on or before the 2nd day of JULY, 1904. The County Architect will act as assessor.

A. AINSWORTH HUNT,
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Contracts Open.

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Persons desiring to Tender for the execution of these Works, must leave their names at the Royal Engineer Office, Colchester, on or before the 4th day of June, 1904, and pay the sum of 10s. od. for the Bills of Quantities, which, with Form of Tender, will be issued to each candidate.

The Secretary of State for War does not bind himself to accept the lowest or any Tender.

W. A. STCLAIR, Colonel,
Commanding Royal Engineers,
Royal Engineer Office, Eastern District,
Colchester, 25th May, 1904.

COUNTY BOROUGH OF BURY.

HEATING OF TRAMWAY DEPÔT.

The Tramways Committee are prepared to receive Schemes and TENDERS for the HEATING required at the CAR DEPÔT, Rochdale Road, Bury. Particulars may be obtained on application to Mr. ARTHUR W. BRADLEY, Assoc. M. Inst. C.E., Borough Engineer and Surveyor, Bury, on payment of a deposit of £1, which will be returned on receipt of a bona fide tender.

Sealed tenders, endorsed "Tender for Heating, Car DEPÔT," must be delivered at my office not later than the 7th day of JUNE, 1904.

JOHN HASLAM,
Municipal Offices, Bury, Town Clerk,
7th May, 1904.

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Too late for Classification.

- 407.—DRAUGHTSMAN, with own office; can assist in preparation of drawings, &c.
- 408.—CLERK OF WORKS. Fully qualified; knowledge of all branches of building trade; drainage, sanitation, plans, details, materials, &c. Good refs.
- 410.—SANITARY ENG. or SURVEYOR'S ASSIST. exp. in drain inspection and testing, and architectural and surveying works; sanitary diploma.
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- 414.—GENERAL FOREMAN, CARPENTER & JOINER. New or alteration work. Abstainer; long refs.
- 415.—ARCHITECT'S ASSISTANT; 8½ yrs. domestic and factory exp.; wkg. drawings, details, specifications, and perspectives.
- 416.—ARCHITECT AND SURVEYOR'S ASSIST., 25; 9 yrs. in good office; good all-round man; ex. refs.
- 417.—ARCHITECT'S JUNIOR ASSISTANT, genl. office routine, &c. mod. s.
- 419.—ARCHITECT'S ASSISTANT, age 19 (3 yrs. articles), desires appoint. with Quan. Surveyor, neat draughtsman, quantities, refs.
- 420.—CARPENTER AND JOINER, improver, wants job in town or country, mod. s.
- 421.—BRICKLAYER, good, well up in fire and outside work. Range-setting, &c. Good refs.
- 422.—WORKING FOREMAN of Carpenters and Joiners. Household repairs and alterations. Abstainer, good timekeeper.

See p. xxii for the Employment Register.

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Particulars and conditions of sale, with plan, may be had of Messrs. WARD, BOWIE, & Co., Solicitors, 7, King Street, E.C.; of Messrs. REBECK BROS., Auctioneers, The Square, Bournemouth; and of Messrs. HARMAN BROS., 25, Ironmonger Lane, London, E.C.

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Information from accredited sources should be sent to "The Editor" at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.
Addressed postcards on which lists of tenders may be stated will be sent post free on application to the Manager, BUILDERS' JOURNAL, 6, Great New Street, Fetter Lane, E.C.

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Rowland Brothers, Horsham	3,699
Foster Brothers, Norwood Junction	3,555
Cook & Sons, Crawley	3,550
J. Barnes	3,447
W. Taylor	3,442
W. Olliver	3,375
J. & W. Simmonds	3,295

[Rest of Brighton.]

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Knox & Wells, Roath	£3,600
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D. W. Davies	3,540
Shepton & Son	3,400
F. Small	3,400
E. R. Evans & Brothers, Cathays	3,327
F. C. Williams	3,303
D. Davies	3,240
W. Symonds & Co.	3,175
G. Hallett	3,154
J. Allan & Sons, Cathays	3,100
Lattay & Co., Ltd.	2,950
W. Thomas & Co., Treillian Terrace	2,959

* Accepted. [Rest of Cardiff.]

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Wilson, Border & Co., Romford	£143 0 9
F. Johnson	137 0 0
J. Jackson, Forest Gate	125 0 0
J. Rayner, East Hanningfield	122 0 0
R. A. Bonnat	97 13 4
F. Weight	80 0 0

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J. Rayner	£129 10 0
Wilson, Border & Co.	110 0 0
F. Johnson	109 0 0
J. Jackson	105 0 0
R. A. Bonnat	98 15 6

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G. H. Smith & Son, Devonport	1,489 15 0
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Kingston Road.	
T. W. Pedrette	£4,442
G. Wimpey & Co.	4,425
B. Cooke & Co.	4,421
Cunningham, Forbes & Co.	4,421
T. Adams	4,247
S. Kavanagh & Co.	4,189
A. T. Catley	3,815
E. Iles	3,695
J. May	3,650
T. Free & Sons	3,642

* Accepted.

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Shanks & McEwan	9,080 12 10
P. McBride & Co.	8,661 3 11
H. Hastie, Bathgate	8,120 11 7

* Accepted.

London, N.—For the erection of factories, Wood Green, for Messrs. G. O. Barratt & Co. Mr. Francis L. Pither, architect, 91, Tollington Park. Quantities by Messrs. Westmoreland & Horder, 23, Pall Mall East:—

Butcher	£8,640 0 0
Smith & Son	8,500 0 0
Moss & Co.	8,475 5 1

Ford & Walton	£8,143 0 0
Allen & Sons	7,925 0 0
Patman & Fotheringham	7,823 0 0
Parnell & Son	7,696 10 0
Willmott & Sons	7,337 0 0
Hawes, Wood Green	7,267 8 0

* Accepted.

London, N.E.—For alterations to 1 and 2 Basing Place and 43, 45 and 49, Kingsland Road, Shoreditch, N.E., for Messrs. Thomas Eaton & Co. Mr. John James Downes, architect, 199, Lewisham High Road, S.E.:—

Snewin Brothers & Co.	£2,394 0 0
H. Groves	2,296 0 0
Sheffield Brothers	2,129 0 0
Joselyne & Young	2,095 0 0
J. Ivey	2,050 0 0
S. R. Best	2,021 0 0
T. D. Leng	1,900 0 0
W. O. Collingwood	1,784 18 6
R. Schooley & Son	1,676 0 0

* Accepted.

London, N.E.—For alterations and additions to building at corner of High Road and Manor Road, Woodford Green, to form men's and youths' club, for Mr. J. R. Roberts. Mr. A. W. Hudson, P.A.S.I., architect and surveyor, 87, Finsbury Pavement, E.C.:—

T. Osborn & Sons	£1,986
J. S. Hammond & Son	1,931
C. Vigor & Co.	1,888
C. S. Foster & Sons	1,850
S. J. Scott	1,760
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* Accepted.

A New Ladies' Bath at Battersea has just been completed from the designs of the borough architect, Mr. W. Eaton, A.R.I.B.A. The water area is 75ft. by 25ft. The bath is lined with white-glazed bricks, the bottom being relieved with coloured bricks, forming stars and guide-lines. The bath is described as Roman, from the fact that where the dressing boxes are usually placed there are three tiers of stone seats running round three sides of the bath, while the cubicles, fifty-six in number, are underneath, access being gained to them by five flights of York stone stairs.

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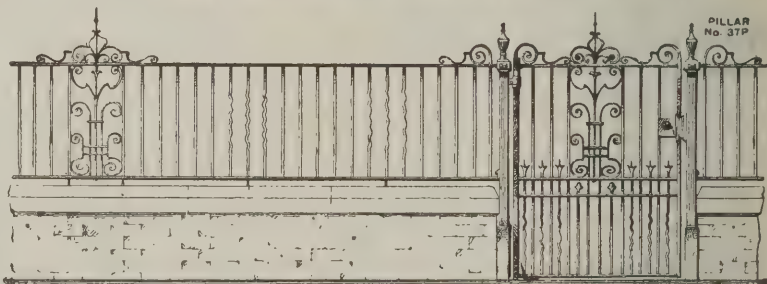
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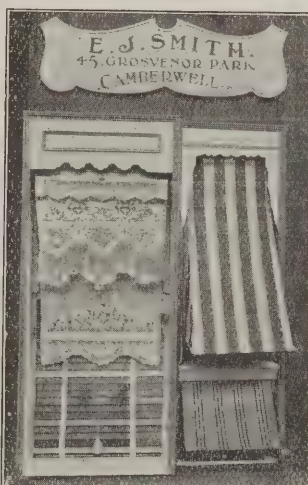
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FORAGE.			
Beans	per qr.	1 14 0	2 0 0
Clover, best ..	per load	4 0 0	4 7 6
Hay, good ..	do.	3 12 6	4 0 0
Sainfoin mixture ..	do.	3 12 6	4 2 6
Straw	do.	1 12 0	2 2 0

OILS AND PAINTS.

Castor Oil, French ..	per cwt.	1 0 5	—
Colza Oil, English ..	do.	1 1 6	—
Copperas	per ton	2 0 0	—
Lard Oil	per cwt.	2 15 0	2 17 0
Lead, white, ground, car-	do.	1 4 10	—
bonate	do.	1 0 4½	—
Do. red	do.	0 15 6	—
Linseed Oil, barrels ..	per gal.	0 0 6½	0 0 6½
Petroleum, American ..	do.	0 0 4½	0 0 5½
Do. Russian	do.	0 8 0	—
Pitch	per barrel	11 0 0	—
Shellac, orange ..	per cwt.	3 2 6	3 5 0
Soda, crystals	per ton	1 2 0	—
Tallow, Town	per barrel	1 1 6	—
Tar, Stockholm ..	per cwt.	2 1 9	—
Turpentine	do.	—	—

METALS.

Copper, sheet, strong ..	per ton	72 0 0	—
Iron, Stafs., bar ..	do.	6 0 0	8 0 0
Do. Galvanised Corru-	do.	10 5 0	10 7 6
gated sheet	do.	11 12 6	—
Lead, pig, Soft Foreign ..	do.	12 0 0	—
Do. do. English common	do.	12 0 0	—
brands	do.	14 0 0	—
Do. sheet English 3lb. per	do.	15 0 0	—
sq. ft. and upwards ..	do.	9 5 0	—
Do. pipe	do.	9 0 0	—
Nails, cut clasp, 1in. to 6in.	do.	—	—
Do. floor brads	do.	—	—
Steel, Stafs., Girders and	do.	5 5 0	6 5 0
Angles	do.	6 0 0	6 5 0
Do. do. Mild bars ..	do.	124 7 6	124 17 6
Tin, Foreign	do.	126 0 0	127 0 0
Do. English ingots ..	do.	24 10 0	—
Zinc, sheets, Silesian ..	do.	25 0 0	—
Do. do. Vienne Montaigne	do.	22 0 0	22 2 6
Do. Spelter	do.	—	—

TIMBER.

SOFT WOODS.			
Fir, Dantzic and Memel ..	per load	1 13 0	3 0 0
Pine, Quebec, Yellow ..	do.	5 5 0	6 5 0
Do. Pitch	do.	2 5 0	3 0 0
Laths, log, Dantzic ..	per fath.	4 10 0	5 10 0
Do. Norrköping	per bundle	0 0 7½	—
Deals, St. Petersburg, Yell.,	3x11 per std.	9 0 0	—

		£ s. d.	£ s. d.
Deals, Strömme, Yellow,			
Unsorted, 3x9 per std.	do.	10 0 0	—
Do. do. do. 2½x7	do.	8 5 0	—
Do. Blankaholme, Yellow,			
2nd, 4x9 do.	do.	10 15 0	—
Do. do. do. 4x8	do.	9 0 0	—
Do. Archangel, Yell., 3rd,			
Do. do. do. 3x8	do.	10 5 0	—
Do. do. do. 4th, 3x8	do.	9 0 0	—
Do. Sulina, Bosnian,			
White, 1st & 2nd, 3x11	do.	8 5 0	—
Do. do. do. 4x12	do.	7 5 0	—
Do. Räfsö, Yellow, 1st,			
Do. do. do. 4x9	do.	16 10 0	—
Do. do. do. 2nd, 4x9	do.	14 15 0	—
Do. do. do. 2nd, 3x9	do.	13 0 0	13 10 0
Do. do. do. 2nd, 3x7	do.	9 15 0	10 5 0
Do. Söderhamn, Dry			
Yellow, 3rd, 4x9	do.	15 10 0	—
Do. do. do. 2nd, 3x8	do.	10 5 0	11 0 0
Do. Nederkalix, Yellow,			
2nd, 3x8	do.	9 0 0	—
Do. Sandvik, Dry Yell.,			
1st, 3x9	do.	11 5 0	—
Do. Petschora, Yell., 3rd,			
Do. do. do. 3x9	do.	10 15 0	—
Do. Quebec Spruce, 3rd,			
3x9x13ft. do.	do.	9 0 0	—
Do. St. John's Bright			
Spruce, 3rd, 3x9	do.	7 15 0	8 0 0
Battens, all kinds, ..	do.	6 5 0	12 5 0
Scantlings	do.	6 10 0	9 15 0
Flooring Boards 1in. pre-			
pared, 1st	per square	0 9 6	0 12 6
Do. 2nd	do.	0 8 6	0 9 9
Do. 3rd, &c.	do.	0 8 0	0 8 3

HARD WOODS.

Ash, Quebec	per load	3 12 6	—
Birch, Miramichi, Planks,	do.	—	—
3x5 to 16in. per cu. ft.	0 0 11½	—	—
Box, Turkey	per ton	15 0 0	20 0 0
Cedar, Cuba	per ft. sup.	0 0 3½	—
Do. Honduras	do.	0 0 4	—
Do. Tobasco	do.	0 0 5½	—
Elm, Quebec	per load	4 2 6	—
Mahogany, Average Price	do.	—	—
for Cargo, Honduras ..	per ft. sup.	0 0 5½	—
Do. African	do.	0 0 3½	—
Do. St. Domingo ..	do.	0 0 3½	—
Do. Cuba	do.	0 0 2½	0 0 4½
Do. Lagos	do.	0 0 3½	—
Do. Benin	do.	0 0 3½	—
Do. Tobasco	do.	0 0 5½	—
Oak, Libau, Crown	do.	—	—
Wainscot logs	per load	2 15 0	—

Bankruptcies.

[Abbreviations: R.O.—receiving order; P.E.—public examination; C.C.—county court; O.R.—official receiver; Adj.—Adjudication.]

DURING THE WEEK ending May 27th thirteen failures in the building and timber trades in England and Wales were gazetted.

H. R. ELLIS, architect, Great Grimsby. R.O. May 16th. W. J. CRONK, builder, Croydon. R.O. May 16th.

R. T. BRATT, builder, Kidderminster. R.O. May 14th. T. O. BROWN, builder and contractor, Ferndale Glam.

P.E., Pontypridd C.C., July 5th, at 11.15. G. MEEKINS, builder, Leicester. Discharge granted from June 1st.

J. A. ODY, builder and contractor, Kidderminster. Adj. May 14th.

F. COOPER, joiner and builder, York. R.O. May 16th. P.E., York Courts of Justice, June 3rd, at 11.

STAFFORDSHIRE TERRA-COTTA AND FIRE-BRICK CO. (A. J. TWAMLEY), Hednesford. Adj. May 19th.

HARRIS & DAWSON, builders' ironmongers, Stockwell Green, London, S.W. Adj. May 19th.

F. S. HARVEY, builder, Portsmouth. R.O. May 16th. P.E., Portsmouth C.C., June 27th, at 11.

COLVER & CO. (J. T. BALDOCK), brickmakers, Stone, near Dartford. R.O. May 16th.

CURTIS & WEAVER, builders, Beckenham and Westminster. R.O. May 18th.

S. FINDLEY, builder, Newton-le-Willows. R.O. May 19th.

PAYNE, DAYMOND & Co., brick manufacturers, Ellesmere Port, Chester. Gross liabilities £2,580; expected to rank for dividend £241; assets £363.

LEEDS ART POTTERY AND TILE CO. (R. HAUPTMANN). First meeting, O.R.'s, Leeds, June 3rd, at 11. P.E., Leeds C.C., June 28th, at 11.

W. WENHAM, electrical engineer, Croydon. First meeting, 24, Railway Approach, London Bridge, June 3rd, at 11.30. P.E., Birmingham C.C., June 29th, at 11.

E. J. BIRCH, builder, Birmingham. First meeting, 174, Corporation Street, Birmingham, June 2nd, at 11. P.E., Birmingham C.C., June 20th, at 2.

J. BULLING, builder, West Bridgford. First meeting, O.R.'s, Nottingham, June 1st, at 12. P.E., Nottingham C.C., June 3rd, at 10.30.

J. W. DIENS, painter and decorator, Wolverhampton. First meeting, O.R.'s, Wolverhampton, June 3rd, at 11. P.E., Wolverhampton C.C., June 8th, at 11.

H. POLLARD, plumber and contractor, Chorlton-cum-Hardy and Manchester. First meeting, O.R.'s, Manchester, June 1st, at 3.30. P.E., Manchester C.C., June 13th, at 10.

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THE BUILDERS' JOURNAL

AND ARCHITECTURAL RECORD.

June 8, 1904. Vol. 19, No. 487.

6, Great New Street, Fetter Lane, E.C.

Summary.

The R.I.B.A. elections are given on p. 276. Mr. Belcher is the new president. Pro-registrationists are strongly in evidence on the Council.

The latest phase of architectural competition is that for alterations to the Shire Hall, Bury St. Edmunds, in regard to which the county surveyor says: "The committee certainly reserve their right of ultimate decision, but I feel certain they will take my advice as regards the same. I also think the selected design will be carried out in my office." (Page xx.)

Whistler's famous "Peacock Room" is on exhibition at Messrs. Obach's, 168, New Bond Street, W. (Page 272.)

A huge new hospital—called the Bellevue—is to be built in New York. Accommodation will be provided for 2,500 patients and over 100 physicians. Most of the roofs will be flat, for use as gardens, with temporary wards for 100 patients. (Page 277.)

A discussion on plenum ventilation took place at the Institute on Monday evening. Mr. William Henman said he had not the faintest doubt that a building could be efficiently ventilated on this system, and he was convinced that failure to do so was due to a want of knowledge and experience or to neglect; at the same time he stated that unless the system were continuously applied it was questionable whether it could be permanently successful, and he was not inclined to recommend its employment unless the advantages were considered worth the cost of continuous working. It was not sufficient to ventilate a building simply for the periods during which it was occupied and then to stop the mechanism and bottle up the air until the next period of occupation. Some of the speakers criticized the plenum system, as carried out at the Belfast Hospital, but general opinion was in favour of it for special and crowded buildings. (Page 274.)

A contributor observes that it does not appear to be sufficiently appreciated that good brickwork cannot be done in cement-mortar with fine joints, which is not plastic and will not squeeze out and flow to fill vacuities like common mortar; our contributor adds that if the architects and engineers on the committee for the standardization of bricks had added to their number a good practical bricklayer the result of their labours might have been different. (Page 269.)

Whitgift's Hospital, Croydon.

ONCE again the little hospital at North End, Croydon, is proposed to be pulled down in order that the street may be widened; and the Corporation seem intent on their purpose this time. Whitgift's Hospital is three hundred years old, a quiet brick structure with a little quadrangle of which one gets a delightful peep through the low Tudor archway. It seems a pity that with so many houses around it which are architecturally worthless the Corporation cannot leave this tranquil relic alone and carry out their street widening by pulling something down on the other side—there is a public-house opposite which might well be set back, and the extra expenditure incurred would be a thousand times repaid by the preservation of a building which can be regarded with pleasure instead of distaste. The Croydon Antiquities Committee is raising a protest against its demolition and hopes that, with the support of public bodies as well as individuals, such pressure will be brought to bear on the Corporation as will prevent them perpetrating an act of vandalism. It is true that buildings, however old or interesting, cannot be allowed to remain if they are a danger or a nuisance to the public, but they should only be pulled down when every other means has been tried. At Croydon this does not appear to be the case.

Building Operatives for Canada.

By this time everybody knows that the Canadian Government offer the greatest facilities to British emigrants, in whose behalf the Dominion representatives are most busily employed. But telegrams from Canada have spread alarming reports about the unemployed in cities there, especially as regards building workmen, and the matter has come up for discussion in the Dominion House of Commons. It has now been expressly stated, however, that the unemployed are not nearly so many as has been represented, and they are mostly Italians who have been sent out in large batches by unscrupulous emigration agents. Lord Strathcona has been asked to prevent this emigration of Italians and also to check English mechanics, for whom there is little need: but reports speak of a great deal of new building in Montreal and elsewhere, which keeps the building and allied trades

busy, so that masons and plumbers are still in request. This fact will doubtless be of interest to men here.

Music-Hall Architecture.

THE announcement that the directors of the Palace Theatre intend to erect the largest music-hall in London on a site adjoining the "Horseshoe" at the bottom of Tottenham Court Road recalls to mind the meretricious design and decoration which unfortunately are so characteristic of this class of building. We have never yet seen a music-hall treated in good taste. There is always a blaze of gold ornament, with the familiar cherubs and degenerate Italian Renaissance ornament plastered over the tier-fronts; pillars and pilasters twisted into the most atrocious shapes, with no end of flutings and beadings and floral appendages; and the inevitable broken pediment in one place and another. And why so? Simply because the architects who cater for this class of work have very little ability in design; and especially because the decoration is done "at a price" by firms who have no notion of good taste; firms who go on multiplying enrichments from common stock patterns. We have no special complaint against the system, but we greatly regret that so many brilliant opportunities have been wasted by persons not sufficiently educated to make good use of them. Undoubtedly the majority of people who frequent music-halls are frankly pleased with the decoration; it reflects their own taste, and on that very ground an argument has been made for calling it really modern art; that, however, is dragging the best down to the level of the commonplace. We should very much like to see the design of a new London music-hall placed in the hands of a thoroughly able architect, one who would give us something fresh, a good colour scheme, decoration of a restrained character, well designed and harmonious with its surroundings, used with discretion instead of being spluttered over every scrap of plain surface. And we think the public would be pleased with the result, even though they have come to regard a place as beautiful so long as it exhibits a profusion of gilded ornament. Mr. Verity made a successful experiment in the Imperial Theatre and this serves to indicate the possibility of a fresh treatment in a music-hall.

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Supplement to
THE BUILDERS' JOURNAL AND ARCHITECTURAL RECORD,
Wednesday, June 8th, 1904.



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R, F.R.I.B.A., ARCHITECT. (ACADEMY, 1904.)

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S.K. EXAMINATIONS, 1904.

BUILDING CONSTRUCTION.

Stage II.—Questions and Answers.†

[Four hours were allowed for this examination. Not more than six questions were to be answered.]

21. It is commonly specified that the stones of masonry are to be laid on their natural beds; there are exceptions to this rule; for what purpose should stones be built with their planes of beddings vertical?

What do you understand by the "natural" beds of building stones? Describe building stones which do not show "bedding." Describe "cleavage" as distinct from bedding. (24)

For cornices and projecting strings which are moulded it may be advisable to use the stone with the natural bedding vertical and at right angles to the face of the wall.

Rocks which result from the cementing together of particles deposited at the bottoms of ancient lakes and seas show a structure of layers; they are called stratified rocks; they tend to divide at the joints between layers; a mason calls the surface which results from such division a "natural bed."

Granitic rocks do not show bedding; the joints in such rocks are not the result of stratified formation.

Some rocks which were originally deposited from water either as fine triturated mud or as minute organic remains (clay, slates and limestones) may show very slight appearances of stratification, natural bedding; such rocks, having been much altered by pressure and by partial solution and crystallisation, may not show bedding, or show it only very slightly, in the stones as delivered to the mason. Slaty cleavage is supposed to result from great pressures whose directions were at right angles to the planes of cleavage; the planes of cleavage may be at right angles to observed planes or beds of stratification.

22. A good straight-grained piece of timber dressed to a square cross-section 1in. by 1in. placed horizontally on supports 12in. apart breaks under a load of 544lbs. applied gradually at the point midway between the points of support. You have to make use of a beam of rectangular cross-section of this timber to carry safely a uniformly distributed load of 10 tons over a span of 16ft.; the factor of safety is 6; the breadth of the beam is 9in. What should be its depth? (N.B.—The strength of a beam of rectangular cross-section is proportional to its breadth, to the square of its depth and inversely to its length:—

$$s \propto \frac{bd^2}{l} \quad (36)$$

The experimental piece broke with a load of 544lbs.; allowing a factor of safety of 6, it would safely sustain a load of, say, 90lbs.: the strength s is proportional to the safe load:—

$$\text{90lbs.} = m \frac{1 \times 1}{1728} \times \frac{1 \times 1}{144} = \frac{m}{1728}, m = 155520.$$

A beam will bear safely at its middle point one-half of the safe distributed load:

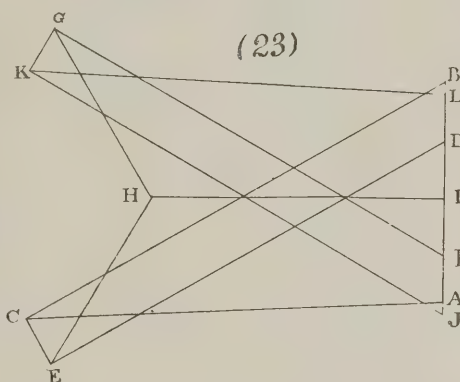
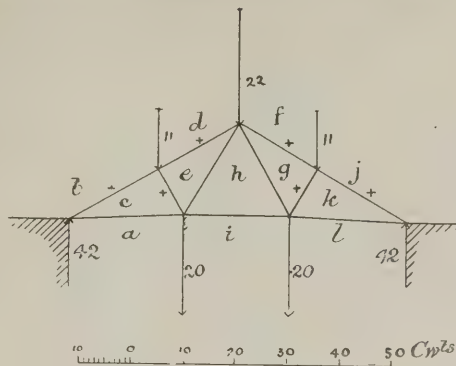
$$5 \times 2240 = 11200 = 155520 \frac{75 \times x^2}{16}, \text{ from which we obtain the depth } x = 1'24\text{ft., say } 15\text{in.}$$

*23. Draw the figure and scale on your paper.

Draw a diagram to the scale given which will show the stresses resulting from the applied loads in the members of the roof-truss shown as a skeleton: mark each member which is in compression with the sign +.

[It is assumed that the longitudinal axes of symmetry of the members all lie in one

† The questions and answers in Stage I were given in THE BUILDERS' JOURNAL for May 18th.



plane (the plane of the paper) and that they are connected at the joints by smooth pins which are at right angles to this plane.]

See drawing. (36)

24. In connection with woodworking machinery what is "slot mortising"? What advantage has it over "chisel mortising"? What various operations can be effected by the tool called a "general joiner"? (In this question slot mortising is not restricted to mortises open at one end which are known as "slot" mortices.) (33)

Slot mortising is effected by a revolving auger which has also a traverse motion, or by an endless cutting chain: the "core" comes away as borings and the wood is less stressed than in chisel mortising. In the latter the removal of the core, which in the operation of mortising is left tightly jammed in the mortice, is tedious and troublesome. Slot-formed mortices need to have their ends squared with a chisel. The tool called a general joiner appears to have developed from a circular saw bench by the addition of parts and motions. It will do plain sawing, grooving, checking, cross-cutting, slot mortising, boring, tenoning, irregular and circular moulding. What is called an "improved" general joiner will also do planing. The tool is driven by a belt from a driving pulley.

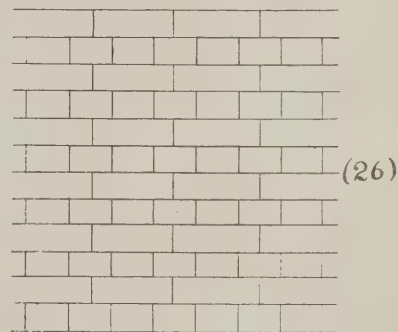
25. Describe the structural differences as far as you know them between what are called "hardwoods" and "soft woods." Classify the following as "hardwoods" and "soft woods":—Mahogany, willow, yew, pitch-pine, cedar of Lebanon, alder, walnut. (24)

In soft woods medullary rays are not conspicuous; they are conspicuous in many hardwoods; and there is an essential difference in the structure of medullary rays in soft woods from those in hardwoods: most soft woods are resinous—no hardwoods are resinous. The timber from trees classed by botanists as "conifers" is called "soft wood," whether the wood is comparatively soft or not; all other timber from dicotyledonous trees (this excludes palms, &c.) is called "hardwood," whether it is comparatively hard or not. Mahogany, willow, alder and walnut are "hardwoods"; yew, pitch-pine and cedar of Lebanon are soft woods.

26. In a brick wall $2\frac{1}{2}$ bricks thick what is the face area of a rod of such work? Sketch on your squared paper (assuming the distance between a pair of the lines to represent 3in.) about a square yard of the elevation of one face of this wall in English bond. The bricks are 9in. by $4\frac{3}{4}$ in. by $2\frac{3}{4}$ in. and the joints are $\frac{1}{4}$ in.; how many facing bricks are in a square yard (supposing there are no bats)? (33)

A rod of brickwork is $16\frac{1}{2}$ ft. by $16\frac{1}{2}$ ft. by $1\frac{1}{2}$ bricks thick; the area of one face of such a portion of wall is therefore $272'25$ sq. ft. It is assumed that the quantity in a given area of $2\frac{1}{2}$ -brick wall is to the quantity in a $1\frac{1}{2}$ -brick wall as 5:3; in this view the area of one face of a rod of $2\frac{1}{2}$ -brick wall is $\frac{3 \times 272'25}{5} = 163'35$. (This assumption is

not quite accurate if we consider the joints as having an appreciable thickness. It does not appear to be sufficiently appreciated that it is impossible to do good brickwork in cement-mortar with fine joints; this appears from the recent attempt to settle the size of a standard brick. Cement-mortar is not plastic; it will not squeeze out and flow to fill vacuities as common mortar does; if the architect and engineers on the committee had added to their number a good practical bricklayer the result of their labours might have been different. This difficulty in the behaviour of cement-mortar is increased when large-sized stones with wide beds are used. Dr. Stoney, of Dublin, in parts of the work of O'Connell Bridge, to get over the difficulty, mixed his cement-mortar with a proportion of common lime-mortar. Some architects and engineers who take mainly an



office view of work should note this practical point; there is much work being badly done through want of knowledge of it. It is surely time that measurement of brickwork in rods were superseded.) In English bond there are twice as many headers as stretchers on the face; the face area of a stretcher is $9\frac{3}{4}$ in. by 3in. = $27\frac{3}{4}$ sq. in. There are 1,296 sq. in. in a yard: $\frac{1296}{27\frac{3}{4}} = 46'7$; there are therefore

$$46'7 = 23'35 \text{ stretchers in a square yard and}$$

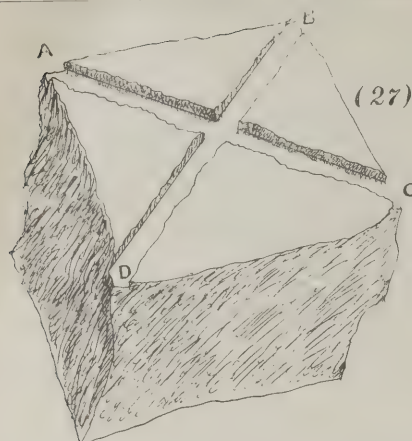
46'70 headers, total 70'05 in one face (or 140'10 in two faces).

*27. Answer only one of the following (a) or (b):—

(a) The figure (see next page) shows a block of stone which is to be dressed; sketch it approximately, upon your squared paper (the space between two lines may be taken as 4in. wide). The face ABCD is to be dressed to a true plane. Show by sketches how this is done. Give any written explanation you think necessary. (29)

(b) Sketch upon your squared paper (assuming the distance between a pair of lines to represent 2in.) a block of rock-faced ashlar (marginied) just being lowered to its bed. The face of the stone is 3ft. long and 1ft. 4in. high. Show how the stone is held by the suspending tackle. (29)

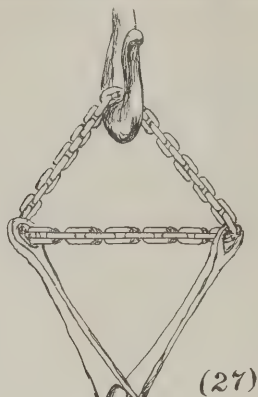
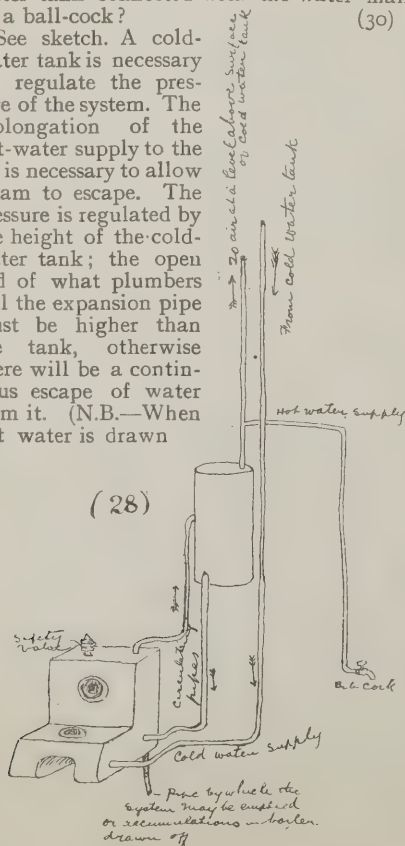
(a) In working two chisel drafts on the face of the stone the mason exercises some judgment, guided by the appearance of



the rough stone. He may not cut too much of the stone away and he should remove enough to make sure that the plane of the face will escape any of the hollows which he sees. He determines the plane of the face by two chisel drafts which intersect. He works the drafts to fit a straight-edge (two intersecting straight lines determine a plane). He now dresses off the surplus (the rock-face), using a straight-edge from one chisel draft to another. I show a pair of diagonal drafts; the stone-cutter, or mason, may select any pair of intersecting lines which he may think most suitable, or he may run any pair of drafts sighting over parallel-edged straight-edges to get them "out of wind."

28. Sketch upon your squared paper a hot-boiler and a hot-water cylinder (the distance between two lines represents 6 in.). Assume a cold-water supply tank. Show in diagram the pipes between the cold-water tank and the boiler and the cylinder. Show a pipe with bib-cock from which a supply of hot water may be obtained. (N.B.—There should be three pipes to the boiler, viz., the cold-water and the two circulating pipes. It is a common error to bring the cold water into the cylinder every time there is a draw-off.) Why is it necessary to have a cold-water tank connected with the water main by a ball-cock?

See sketch. A cold-water tank is necessary to regulate the pressure of the system. The prolongation of the hot-water supply to the air is necessary to allow steam to escape. The pressure is regulated by the height of the cold-water tank; the open end of what plumbers call the expansion pipe must be higher than the tank, otherwise there will be a continuous escape of water from it. (N.B.—When hot water is drawn



off there is usually some delay and waste owing to the lodgment of water in the pipe, which has had time to cool since the last previous draw-off. This cold water is wasted and the coming hot water must also heat the cool pipes. To avoid this the water in the pipes is put in "circulation" usually in a very inefficient manner. Take the worst case. Suppose that the hot-water system is connected to the cold water: the water will keep warm in the pipes, there will be circulation, but on drawing-off water will come as readily from the cold supply as from the top of the cylinder, so that in such a system the first-drawn water is warmest and "hot" water is impossible. The evil is lessened if the connection is with the down-circulating pipe between the cylinder and the boiler; but, even so, if there is much water drawn off, the water in the lowest part of the boiler becomes cold owing to the inflow from the cold supply, and this cold water is drawn to the "hot-water" supply. In any circulating arrangement there will be "waste" of heat owing to the system being worked as a hot-water heating system. In some cases this may be desirable, but the same system cannot both heat rooms and give hot water efficiently. A circulating system can be arranged in which the flow to a draw-off is only from the hot direction; for this purpose the double pipe must be brought to each draw-off cock; the cock is a three-way plug-cock which allows circulation through it but shuts off circulation while water is being drawn off.)

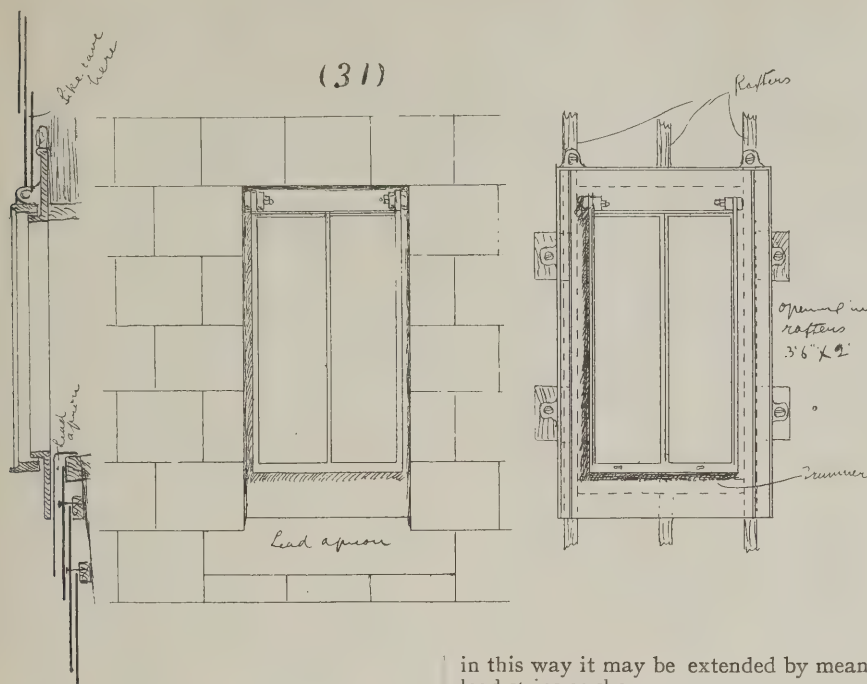
29 Describe the complete operation of producing a plane surface in plasterer's work lathed on battens; the work to be of the best class finished to be painted. Describe the preparation of materials for the several coatings. (24)

The battens, spaced about 12 in., should be fixed fairly true to a plane surface; they may be spiked to plugs in the walls or they may be fastened with iron wall-hooks. The laths are nailed to the battens to such a gauge (distance apart) as that the first coat of plaster will sufficiently squeeze through and turn over without breaking to form what is called the keying. Plasterer's "coarse stuff" is made from rich lime putty, clean sharp sand and cowhair. To make lime putty, quicklime is slaked with an excess of water; the resulting milk of lime is strained to remove imperfectly-burnt pieces of limestone, &c; it is run into a bed prepared by forming a floor and sides

of riddled or screened sand; when the "milk" cools and dries to a pasty mass that can be lifted with a shovel it is lime putty. The putty in the bed is of different qualities: that which settles at places remote from the point where the milk is discharged is the finest, and is used for the finer work (for setting stuff). Cowhair is beaten with laths to open it out (to break open the tufts and separate the hairs; half a pound to a bushel of coarse stuff is a very full allowance), and it is then mixed with the putty, using a rake to thoroughly incorporate it; the putty is now tossed and tempered with the proper proportion of sand (adding water if necessary) to form coarse stuff. Some coarse stuff is now carried by an attendant to the plasterer's mortar-board; from this the plasterer takes it upon his "hawk," from which he trowels it on to the lathing with just so much work as is necessary and no more, and driving his trowel at about an angle of 45 degs. to the direction of the laths. When the coat is sufficiently firm to bear it, the surface is scratched with a comb formed of some pointed laths (it is recommended for careful work to scratch with a single point). The second coat is also of coarse stuff; it is put on when the first coat has sufficiently dried; this coat is used to work out the surface to a true plane; it is worked on the surface with a wooden trowel called a float (the true surface is given by screeds). The third coat is the setting coat; it is prepared from the finest portions of putty mixed with washed sand carefully incorporated, and worked through a fine sieve. The floated surface is scoured (wetted with water from a brush and rubbed with the float to roughen the surface). The setting stuff is trowelled on, then floated and ultimately finished with the trowel; this may, for extra good work, be again scoured and treated with the setting stuff another time.

30. Describe the complete operation of painting a new outside door, commencing with the priming: to be grained imitation oak and finished in what you think is the best manner to withstand the effects of the sun and weather. (24)

The door should be quite dry; if it is of fir timber the knots should be "killed" (patent knotting is universally used for this purpose), and covered with a special paint which will prevent the resin of the knot from affecting the oil paint. The work is now coated with oil paint, white lead paint, with Venetian red or lampblack stain to cover the shading of the timber and form a fairly uniform ground; this is the priming coat; the oil is a good deal absorbed by the wood, and this coat may have a less proportion of turpentine than succeeding coats. The proper use of turpentine in oil paint is very imperfectly understood by many house-painters; for outside work which is not to be varnished very little turpentine should be used, but for work that is to be varnished the ground work should be prepared, using a fair quantity of turpentine so that the foundation shall be "hard"—if fatty and soft it will not carry properly the final hard varnish surface. When the priming is dry the small defects, nail heads, &c., should be filled more than flush with hard stopping (white lead and gold size). When this has set it should be levelled off with glass cloth and the whole door rubbed lightly with glass cloth and well dusted; it may now be coated with a good heavy coat of white lead stained with ochre and orange lead; again glass-papered and coated, and again glass-papered and coated; these coats should be carefully prepared from pure materials, linseed oil, ground sugar of lead for driers, spirits of turpentine and the white lead and stainers (the exact proportions are determined by the experience of the competent workman). For exceptionally careful work the door might be filled and pumiced



in this way it may be extended by means of lead strips as shown.

*32 Trace neatly in ink the drawing shown, also the writing and the figures. (The Indian ink should be sufficiently thick to give opaque lines suitable for photographic printing; the lines should be well defined, having firm unbroken edges; they should neither stop short nor go beyond the proper points.) (29)

Stage 3 and Honours.

In addition to the answers to the questions set in stages 1 and 2, our readers will probably wish to have answers to the questions in the mechanics of building construction in stage 3, and the answer to a quantity question in Honours. These are not difficult questions to any student who has read the articles on building construction in *THE BUILDERS' JOURNAL*.

DIVISION II.

*44. A long straight wall, built of, say, granite in cement mortar having the vertical cross-section shown (see next page), is proposed to be built to retain water; it may be supposed to act as one block resting on a thin mortar bed at A B, which is supposed to be water-tight; the friction on A B is sufficient to prevent sliding on the bed so that the tendency of the wall to fail is by overturning; the weight of the wall is 170lbs. per cub. ft.; when the water stands at the level C D on the A C side of the wall, what is the pressure in lbs. per sq. ft. on the bed at A, and what is the pressure in lbs. per sq. ft. on the bed at B?

Again, suppose the wall to be built so that the face B D is next the water, what is now the pressure in lbs. per sq. ft. at A and B? Why is it advisable that the line of direction of action of the resultant pressure should meet the bed-joint at a point more than one-third of the length of A B from A when the water is on the side B D or from B when the water is on the side A C? (60)

First case.—Find the centre of gravity of the section. (This may be done in several ways—the method indicated in the figure. Extend the top of the wall to the left so that the line is equal to the sum of the base and top, and also extend the bottom line to the right, adding 3ft. to it. The dotted line joining these points intersects the middle line of the section in the centre of gravity.) Take 1ft. length of wall; its weight is 51,000lbs. (approximately). Take the pressure

of water as 25,000lbs.; compound these at the point where they intersect; the resultant 63,000lbs. is shown on the drawing; the direction of this force meets the base at E. The question assumes that the horizontal component may be neglected, being balanced by the friction of the bed. We have now a vertical force of 59,000lbs. applied at E to the rigid body, the portion of wall; now if an equal and opposite force were applied at A it would balance this vertical force or stress of 59,000lbs. The wall however is sustained by a distributed stress, and the resultant of this balancing distributed stress must exactly meet 59,000lbs and be equal and opposite to it. If the point E were at the centre of A B it is plain that the distributed stress would be uniform, the strained area being symmetrical around the point at which 59,000 meets the area: E is however not in the centre, so that the strain on the area is not uniform; it is greater at B than at A, but stress and strain are proportional in the same substance. No doubt there is a strain in the wall as well as in the bed, but we may deal with the question as if the whole of the strain were in the bed. The portion of wall which remains in contact with the bed, as well as the bed, is assumed to continue to be a plane surface; if this be so the strain (and consequently the stress) diminishes uniformly from B towards A. Now the resultant of uniformly diminishing distributed stress which reaches 0 (as found at the beginning for water) is at a position of one-third from the maximum. Make $EG = 2 BE$, and find the point H such that one-half of the product of B G in ft. and B H in lbs. (taken from the respective scales) = 59,000; the length B H in lbs., viz., 1,475, gives the pressure per sq. ft. at B. There is 0 pressure in the region between G and A. In some books it is said that in the circumstances a tensile stress is produced at A. This is manifestly impossible because the question assumes no tensile connection; if the question were a practical water question we could no longer assume the bed to be water-tight: the joint would gape at A, water would get in, and we would then have to take account of the upward pressure of water between A and G. In the case where E happens to be at one-third of B A from B it will be seen that G exactly meets A, so that though the pressure becomes 0 at A there is just in such a case no gaping of the joint. Taking into account all the circumstances, the wall is safe so long as the line B H in lbs. does not exceed the safe load per sq. ft. for the material, whether E falls outside the middle third of A B or not.

Second case.—In the second case the resultant meets A B within the middle third, again taking the vertical component. This is resolved into two parallel forces at t (the boundary of the middle third) and c, the centre of A B. The component at c is resisted by a uniformly distributed stress of approximately 850lbs. per sq. ft.; the component at t is resisted by a uniformly varying stress of 5,100lbs. per sq. ft. at A and 0lbs. per sq. ft. at B. These combined give a stress uniformly varying from 5,950lbs. per sq. ft. at A to 850lbs. per sq. ft. at B. (In working the question for an examiner the diagram would be quite sufficient without the explanation here given.)

*45. Given a portion of a roof-truss in skeleton as shown stressed by the forces shown, draw a stress diagram to show the stresses in the several members of the truss.

N.B.—The assumption is made that these members have their axes of symmetry in one plane and that the lines of action of the applied forces are all in the same plane, and that all the members which meet at any point are each (if not held elsewhere) free to move round a pin at the point, and that these pins are at right angles to the plane of the forces, represented by the plane of the paper. (60)

smooth, as a coach-painter prepares his work, but this is rarely done with doors. For a rich dark-oak colour the ground should be a moderately rich orange (orange modified by white) and the graining coat of burnt umber in oil and spirits of turpentine with driers. The imitation of wood is now executed according to the ability of the workman: when this coat dries the work is "glazed," worked over again in distemper (of which the binding is beer); the colours may be vandyke brown, sienna, drop black. The work should now have two good heavy coats of body varnish, the gloss being taken off the first coat of varnish by rubbing with ground pumice and "shammying off." (There has for some years been considerable prejudice against grained work on the ground that imitation is dishonest and consequently in bad taste; house-painters are themselves to blame because they do not sufficiently bear in mind that their business is not to deceive; no one is taken in by painted work, and it appears to be a pity that a fashionable fad will put out of use for a time the suggestions of rich translucent colours and textures given by the polished surface of timber. The imitation of woods should be more restrained in character than it commonly is; some very good work is to be seen occasionally in England, but it is my feeling that there is more artistic grained work in Paris than in London. The careful householder should know that for wear nothing is so permanent as good, carefully-brought-up grained work; it should not get shabby in fifty years on inside work—outside work is different. This answer is much longer than would be expected from a candidate.)

31. Show by neat sketches on your squared paper (distance between a pair of lines to represent 4in.) a cast-iron skylight glass area 3ft. by 1ft. 8in. Show how it is fitted to the opening in the rafters. Show how the slates are fitted round it. Show such lead flashings, &c., as you think will make a perfectly good watertight work. The slates are 24in. long, lap 4in. (33)

See sketches. It is usual to merely flash with the lead apron shown; the frame of the skylight is supposed to be wide enough to do without flashing, and there are two beads (shown on sketch) which prevent the water passing to the edge of the frame; if the frame is too narrow to make a safe job

This is a well-known case: it appears to be indeterminate when the central joint on the rafter is reached; a point l is assumed and the work is proceeded with as if l were the correct point, the lines being drawn dotted to distinguish them as provisional lines. When the joint $qklm$ is reached it is found that the polygon will not close; rk and q must lie on the same right line in the diagram; ln and r are moved towards m and s until the point k reaches such a position as that rkq are in the same right line.

Question 50 also refers to this truss, and the student is asked to say what he can in its favour for wide spans: the diagram shows that if we except the rafters which are in short parts (from joint to joint and held in place by the structure of the roof-covering so that they are kept from bending) the longest strut bearing most compression is hk , and neither the length nor the stress is extravagant.

It would appear, judging from recent examples of railway roofs, that there is not quite enough attention given to the value of the roof-covering and purlins as adding to the general strength of a roof. Looked at from beneath, roofs show as a thick crop of light trusses which it must be troublesome to keep clean and painted. It is remarkable that the opposite tendency is exhibited in the iron railway bridges that are now beginning to replace the old bridges of fifty or sixty years ago: less account appears now to be taken of economy of iron and more care is taken to have plane simple surfaces and parts which may be easily cleaned and painted.

*46. A wooden beam of uniform rectangular cross-section ($d = 18\text{ in.} \times b = 14\text{ in.}$) rests horizontally on supports 40ft. apart; it weighs 80lbs. per ft. of length; what is the bending moment at cross-section 15ft. from one end? Explain in what way the material of the beam resists the bending moment. What is the moment of inertia of a cross-section? What connection has such a quantity with the resistance to the bending moment? (50)

Notwithstanding the efforts of THE BUILDERS' JOURNAL to dissuade them, students will no doubt attempt to find this bending moment by diagrams. Can anything be simpler than this?—1600 (half the weight of the beam) $\times 15 = 1200$ (the weight of 15ft. of the beam) $\times 7.5\text{ ft.} = 15,000\text{ lb.-ft.}$ = the bending moment.

The bending moment is not lbs., it is not ft., it is ft. multiplied by lbs.; it is therefore a couple, and it must be resisted by a couple: the 15ft. piece of beam, if it obeyed the bending moment couple, would revolve in the direction of the hands of a watch; the balancing couple must therefore tend to make it turn against the hands of a watch. Suppose such a couple applied at the cross-section; the upper force would be a thrust and the lower force would be a pull; this thrust and this pull are exerted by the fibres of the timber; there is not one force at the top and one force at the bottom, but a uniformly varying system of forces which passes through the value 0 at the centre of the beam, for very much the same reasons as those which it has been endeavoured to give for question 44.

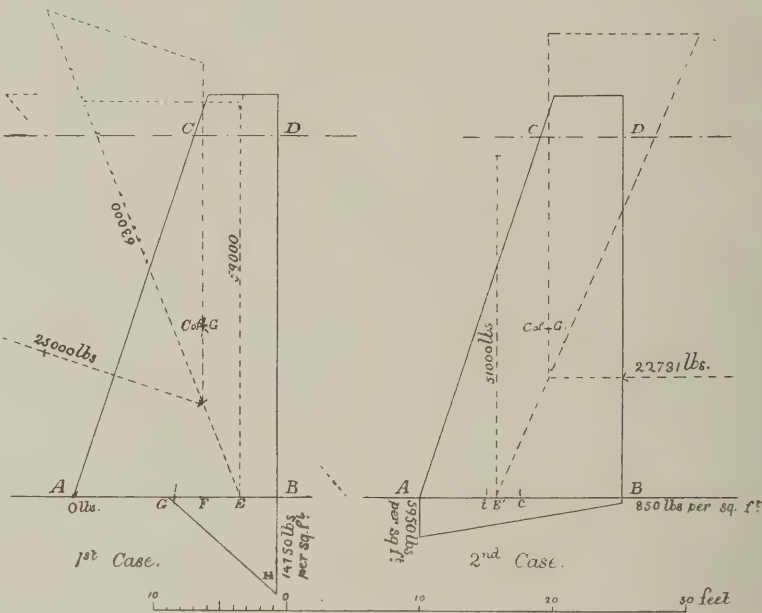
Moment of inertia = $I = \frac{bd^3}{12} = 326$, say.

It may be shown (as in the articles above referred to) that the bending moment = $\frac{bd^2}{6} p$, where b is breadth of beam, d depth and p the stress per unit of area at the extreme fibres (top and bottom of beam). This may be written $\frac{2p}{d} I$; and in this form the expression answers also for a section of, say, a wrought-iron beam not necessarily rectangular but symmetrical above and below the neutral axis.

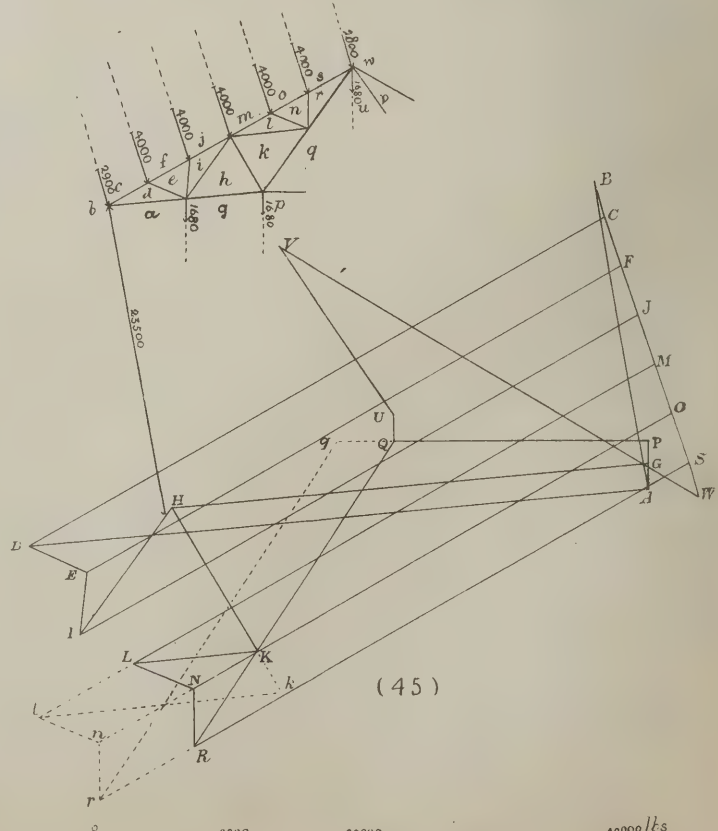
Honours.

69. A water tank is formed by a circular wall resting on a level bed. Its cross-section is such that the top of the wall is level and 3ft. wide, and the wall is 20ft. wide at the bottom. It is 30ft. high; the batter of the inside is 2in. to 1ft.; its outer slope is uniform; the radius of the tank at the floor (the bottom of the wall) is 25ft. Calculate accurately the quantity of masonry in the wall in cubic yards. (80)

Find the centre of gravity of the cross-section. It will be found to be 8.7ft. (8.68 by calculation) outside the inner toe of the wall. $2(8.7 + 25) = 67.4$, $67.4\pi =$ circumference of circle in which lie the centres of gravity of cross-sections = 211.7, area of cross-section $23 \times 15 = 345$. $\frac{211.7 \times 345}{27} = 2,705$ cub. yds.



(44)



(45)

WHISTLER'S FAMOUS PEACOCK ROOM.

THE famous Peacock Room which Whistler designed for the late F. R. Leyland in Prince's Gate was recently placed in the hands of Messrs. E. Brown & Phillips, of the Leicester Galleries, Leicester Square, for disposal, and has been purchased from them for a large sum by Messrs. Obach & Co., who are now exhibiting it to the public in their rooms in New Bond Street. The removal of this work of art at first appeared most difficult, but on examination it was found that the decoration was separated from the actual structure of the room, and it has been re-erected by skilful workmen in a most complete manner. There are doubtless many architects who will be glad of this opportunity to inspect the room.

Views and Reviews.

Country Houses.

We should be dubious for whom this book was intended were it not stated in the first sentence of the preface that the author hopes it will be of interest "to that numerous class who contemplate building a house, but who are unable to decide in what form their ideas may be carried out." Yet even that leaves one with strange thoughts on the subject, though if we were to hurl a shaft at Mr. Briggs it might with equal reason be directed against other architects who have published a collection of their designs. At the same time one cannot get away from the suggestion that this is more or less a picture-book for clients, and possibly a handy book for some architects who have such a high appreciation of other people's designs that they are always ready to appropriate them. We like many of the houses shown, and we acknowledge that Mr. Briggs has every right to circulate his designs in this way, just as other architects do in another way; we also appreciate the fact that architecture has to be a business as well as an art; yet the impression remains that such a book as this must foster the suspicion of a professional advertisement—a kind of pigeon-holed business affair, suggesting that there is always the architect to fall back upon if you want to build one of the houses illustrated. Doubtless that is the last thing which Mr. Briggs, or any other architect who published a similar book, would wish to convey; but logically there is no getting away from the inference. However, we wish this collection of views and plans an equal success as the author's "Bungalows and Country Residences," now running through its fifth edition, with which expression of good-fellowship we trust we may be pardoned so heinous an offence as to insinuate that an architect is just as human as a publisher, a business-man or even a technical journalist!

"Homes for the Country," a series of designs and examples of executed works, with plans of each, by R. A. Briggs, F.R.I.B.A. London: B. T. Batsford, 94, High Holborn, price 10s. 6d. nett.

Mural Painting.

The scheme of this series of handbooks is a very good one. There is first of all a historical sketch, to which most of the photographic illustrations interspersed throughout the book really belong, and then follow chapters dealing with the various practical phases of the craft, all the methods and materials employed being described and compared. In this way the craftsman gains a sufficient knowledge of the historical side of the subject, while at the same time being fully informed of the all-important practical details and recipes. The historical sketch in this book on mural painting occupies thirty-five pages and is mainly concerned with Italian examples; there is a brief reference to the paintings at Knossos (which, however, the author judges to have been some form of tempera, not true frescoes) and a scanty reference to Egyptian work, after which the history is traced on through Grecian and Roman times, and so to the mediæval wall-paintings of Italy, where it stops short. But this first chapter is less interesting than the others, which deal with the preparation of the wall, fresco-painting, tempera, Keim's process, encaustic painting, spirit fresco, oil processes, limitations and capabilities, and receipts. Mr. Jackson explains that the permanency of paintings executed *a fresco* depends upon the action of the carbonic acid in the air, which converts the lime of the mortar into carbonate of lime, which lies on the surface as a thin protective crystalline film. "When the plaster has been properly prepared for the painter and has been left for a short time to become

sufficiently firm, the outline is traced and he begins to work. The surface should be wet enough to receive the impression of the finger, but not so wet as to be stirred up by the brush. If it dries too fast it must be sprinkled. The first tints sink in, and to get the full effect the surface has to be gone over several times. . . . After the painter has laid in his general colour he should wait half an hour or longer, according as the colour sets, before proceeding to more delicate modelling. . . . After the second painting and another pause the work is finished with thin glazings and washings." This extract serves to show how the processes are explained, the whole being supplemented by particulars of different artists' methods and a few anecdotes. Tempera and the other kinds of mural painting are treated similarly. Especially interesting are the references to modern work, as, for example, where it is stated that Mr. Herbert, R.A., in the fresco at the Houses of Parliament cut out the head of Lear six times and that of Cordelia five times, and there was no part of that picture which had not been cut out four times owing to the plasterer using more water one day than he did the next, and so altering the colour. Both Mr. Dyce's and Mr. Herbert's plasterers died mad. The most accessible modern frescoes in London are—Poynter's in St. Stephen's Church, Dulwich; Watts's in the hall at Lincoln's Inn; Dyce's on the east wall of All Saints', Margaret Street; Armitage's at St. John's Church, Islington; and those in the corridors of the Houses of Parliament and in the House of Lords. Of spirit fresco we may see examples by Mr. Gambier Parry (the inventor) in St. Andrew's Chapel, Gloucester Cathedral, and in Higham Church, and by Lord Leighton in his two great frescoes in the Victoria and Albert Museum.

The book is full of useful facts and particulars, and should be of great interest to the craftsman.

"Mural Painting," by F. Hamilton Jackson, R.B.A. London: Sands & Co., 11, Henrietta Street, Strand, price 5s. nett.

Ruskin's Drawing.

Ruskin is always at his best in describing what is generally considered commonplace and uninteresting. He managed to impart charm to the driest subject. And nowhere has he done better in this respect than in the "Elements of Drawing." The book is all the better, too, because Ruskin proceeds on logical lines and does not stray from the point at issue, as he was so prone to do. It is altogether delightful in its treatment of the subject, and we recommend every student of drawing, whether a beginner or advanced, to study the book. It will give him an insight into the finest phases of art, will stimulate his imagination and make him think. Probably the most important chapter is that on colour and composition, where the subject is considered from quite the evolutionary point of view (though the author would have been the first to repudiate such a thing). There are many passages scattered through the book which we wish we could find space to quote, but one having a bearing on a question about which there has been much discussion of late will have to suffice: "All rivers, small or large, agree in one character, they like to lean a little on one side: they cannot bear to have their channels deepest in the middle, but will always, if they can, have one bank to sun themselves upon, and another to get cool under; one shingly shore to play over, where they may be shallow, and foolish, and childlike, and another steep shore, under which they can pause, and purify themselves, and get their strength of waves fully together for due occasion. . . . Now the natural way in which a village stonemason therefore throws a bridge over a strong stream is, of

course, to build a great door to let the cat through, and little doors to let the kittens through; a great arch for the great current, to give it room in flood time, and little arches for the little currents along the shallow shore. This, even without any prudential respect for the floods of the great current, he would do in simple economy of work and stone; for the smaller your arches are, the less material you want on their flank. Two arches over the same span of river, supposing the buttments are at the same depth, are cheaper than one, and that by a great deal; so that, where the current is shallow, the village mason makes his arches many and low: as the water gets deeper, and it becomes troublesome to build his piers up from the bottom, he throws his arches wider; at last he comes to the deep stream, and as he cannot build at the bottom of that, he throws his largest arch over it with a leap, and with another little one or so gains the opposite shore. Of course, as arches are wider they must be higher, or they will not stand; so the roadway must rise as the arches widen. . . . Now this kind of bridge, sympathizing, as it does, with the spirit of the river, and marking the nature of the thing it has to deal with and conquer, is the ideal of a bridge; and all endeavours to do the thing in a grand engineer's manner, with a level roadway and equal arches, are barbarous; not only because all monotonous forms are ugly in themselves, but because the mind perceives at once that there has been cost uselessly thrown away for the sake of formality." This new cheap pocket edition is excellently produced and deserves to be very popular. Other issues of the series have been referred to in our columns on another occasion.

"The Elements of Drawing," by John Ruskin. Pocket edition. London: George Allen. Cloth, 2s. 6d.; leather, 3s. 6d.

Paint and Colour Mixing.

The second edition of this excellent practical book, written by a man thoroughly conversant with his subject, has been published. The plates with samples of oil and water paints of various colours, including the principal graining grounds and upwards of 500 different colour mixtures, are of the greatest service, and the immense number of recipes are of real practical value. A chapter is included on testing colours, and new and valuable chapters to this edition are those on water paints, distempers, &c., the use of black japan in colour mixing and colour harmony. The book does not claim to be a treatise on the subject in its widest sense but only from the limited point of view of the everyday painter. It is wholly admirable.

"Paint and Colour Mixing," by Arthur Seymour Jennings. Second edition. London: E. & F. N. Spon, Ltd., 125, Strand, W.C., price 5s. nett.

Two Housing Books.

One of these books deals with housing experiments in Germany, and is full of details which will be of the greatest interest to architects and builders. Comparisons are drawn between methods and solutions in that country and in this; building laws and plans are described and illustrated, and particulars are given of the municipal work done in Dusseldorf, Ulm, Magdeburg, Frankfurt and other German towns—making altogether a publication of special value. The other book, to which it is supplementary, is a report prepared for the Citizens' Association for the Improvement of the Unwholesome Dwellings and Surroundings of the People—a most worthy society that has done a great deal of good. We can recommend both books to the study of all interested in this vital problem. They are extremely cheap.

"Housing Conditions in Manchester and Salford," by T. R. Marr. "Improvement of the Dwellings and Surroundings of the People—the Example of Germany," compiled by T. C. Horsfall. London: Sherratt & Hughes, 65, Long Acre, price each 1s. nett.

R.I.B.A.

Discussion on the Plenum System of Ventilation.

AT the meeting of the Royal Institute of British Architects held on Monday evening the discussion was resumed on the plenum system of ventilation, adjourned from the meeting of December 4th last, on which occasion Mr. Henman and Mr. Henry Lea read papers dealing with the Royal Victoria Hospital at Belfast.

A short paper on the subject by Mr. Henman, marked "strictly confidential," was included with the issue of the Institute Journal for May 21st, and this was taken as read and formed the basis of the discussion on Monday evening.

Through the courtesy of the secretary of the Institute we are able to give the following

"Notes on the Plenum System of Ventilation"

By WILLIAM HENMAN, F.R.I.B.A.

In the paper which I read last December on the Royal Victoria Hospital, Belfast, I particularly stated it was not my desire to raise controversy on the subject of mechanical *versus* natural means for securing ventilation; yet, as members then present expressed the opinion that it might with advantage be further discussed, the Council of the Institute appointed the 6th of June for that purpose. If the time then at our disposal is to be well employed, the subject of ventilation generally must be dealt with on practical and scientific lines; and as that was not attempted in the paper to which I have referred I venture to suggest some reasons which tend to show that plenum ventilation can be beneficially employed in certain buildings, and ought to be more closely studied by members of the architectural profession.

A primary necessity is to arrive at a concisely correct definition of what should be understood by the term "efficient ventilation" when applied to occupied buildings. Apart from outside contaminating influences which would affect ventilation by whatever means obtained, I suggest it is "continuous change of air within a building without causing discomfort or adversely affecting the health of the occupants."

The province of an architect in connection therewith is to dispose buildings on the ground, construct and equip them, so that the available air may be supplied in ample quantities, freed from suspended impurities, tempered and regulated to requirements without deterioration.

Buildings are erected principally to secure greater comfort than can at all times be obtained in the open.

By the erection of buildings, movement of air within them is necessarily less than it would be over the unoccupied site.

Change of air within a building is principally brought by an ascertainable force—either of propulsion or extraction—although the law of diffusion—*i.e.*, the process which brings about intimate mixture of gases without chemical combination—is a serviceable but less powerful agent in connection with ventilation.

If these premises be accepted, the question which has to be discussed is not whether by plenum ventilation a condition within doors can be secured equal to the open air at its best, but whether it can be employed in certain buildings, suitably constructed, so as to obtain at reasonable cost more constant and efficient ventilation than can be secured by other means.

A great hindrance to the proper comprehension of this subject is the employment of unscientific terms such as "artificial ventilation," "automatic ventilation," "natural ventilation," "mechanical ventilation," be-

cause they prejudice the mind. Ventilation is a result brought about either by natural or mechanical force. Moved by either, air is the same, just as water is the same, whether allowed to flow naturally or forced on by mechanism. Water may become fouled on its way, so may air, whether it pass in naturally or is propelled in its course from the outside to the inside of a building; but it does not in the least follow that fouling results from the power which caused its movement.

It is scientifically wrong to refer to a fire causing a "suctional" influence in a flue, for it does nothing of the kind.

Air when heated expands and is specifically lighter than an equal volume of colder air; it is the latter descending by the force of gravitation which propels the warmer air upwards; consequently an open fire in a room causes change of air by propulsion; moreover, the propelling force of wind is far greater than the suctional influence it exerts upon air within buildings. By realising these facts it is easy to understand that "plenum" ventilation is more in accord with Nature's methods than "exhaust" ventilation.

Notwithstanding the acknowledged extravagance of, the dust and dirt resulting from, and the unpleasant draughts at times set up by the open fire, I for one appreciate its cheerfulness, and believe it will long hold an honoured place in the British home. The mere fact that it necessitates an upcast flue is of the greatest service in connection with ventilation; but as the area of an ordinary smoke flue at the chimney-pot end does not greatly exceed half a superficial foot, the volume of air which can pass through it in a given time is limited, as is also the heating power of a single fire-grate. Consequently, for larger apartments two or more fires are required, and it is well known that unless an adequate supply of air be otherwise provided, smoke will at times be drawn down one or other of the flues. For this and other reasons hot water, steam, air heated by stoves or electricity, are used, none of which demand an upcast flue or flues from the apartment to be warmed thereby. Yet for the health and comfort of occupants, change of air is a necessity and can only be brought about by providing suitable inlets and outlets. This is a simple statement of fact of the utmost importance in connection with ventilation, yet too often neglected, resulting doubtless from difficulty in determining the positions, dimensions and construction of such openings; and I incline to the belief that strong advocates of what they term "natural ventilation" are of the *laissez-faire* order who expect Nature to do everything for them; and as they do not consider whence the wind cometh nor whither it goeth, they provide neither suitable entry nor exit for it in the construction of buildings.

With regard to the possibilities and difficulties of ventilating an apartment warmed by other means than open fires, say a church or assembly room. Suppose it is a calm frosty day, with the temperature inside several degrees higher than it is outside. If inlet-openings are provided at or near the floor level and outlets at or near the ceiling level, a steady flow of air will take place from the inlets to the outlets proportionate to the difference between the internal and external temperature and to the relative sizes and positions of the openings, brought about simply by the propelling force of the colder air outside falling by gravitation; but it does not follow that ventilation will be "efficient" even if the openings are adequate and well placed, because the differences in temperature may not suffice to cause adequate change of air—the opening of a door or window will upset the relative proportions between inlets and outlets, probably causing draughts. Moreover, with

a number of people seated on the floor area, and with air entering around the lower portion of the walls, it can only arrive at those in the centre after becoming fouled by passing over the bodies of those nearer the inlets; but it is more than likely that the bulk of air passing through the room will travel from the inlets to the outlets without changing the air in the central portion. Every variation in temperature or in the force of wind outside will alter the conditions within, and during summer weather the temperature may be considerably higher outside than in; every factor is then reversed. Some improvement may be effected in cold weather by giving the incoming air an upward tendency and providing up-cast flues as outlets, with well-distributed openings near the floor level. The incoming air will then fill the upper portion of the room, gradually descend, change the atmosphere throughout, and pass away up the flues; but this arrangement of flues is not altogether satisfactory in summer weather, and even under such conditions change of air will fluctuate with every variation in the force of the wind outside. Consequently, with the best possible arrangements, so long as natural means alone are relied on, there must be constant, intelligent and personal attention if comfortable ventilation is to be secured; nevertheless I am bound to confess that with care in the design and arrangement of suitable inlets and outlets, with adequate heating power, and with proper means for regulation, it is quite possible with personal attention to secure reasonable ventilation by natural means in buildings only occasionally occupied. None but very sensitive people are quickly affected by breathing a partially vitiated atmosphere, and few remain for long at a time in crowded places, so that when rooms are unoccupied windows and doors should be freely opened and ample change of air secured. If this were regularly done, and thorough cleanliness were observed in and about buildings, there would be less cause for complaint of defective ventilation.

Every individual by respiration and exhalation throws off moisture and animal matter, and when a number of people congregate within an apartment the defilement of the atmosphere is considerable. Rapid change of air will carry much away, but with defective ventilation much is deposited upon exposed surfaces in the building in consequence of variation of temperature, and only prolonged and greater change of air than would be tolerated while a room is occupied will dissipate the contamination.

In the hope of disposing of the charge which has been made against me, that I am a prejudiced advocate of "plenum" ventilation, I now state most distinctly that unless it is continuously applied it is questionable whether it can be permanently successful, and I am not inclined to advocate its employment *unless* its advantages are considered worth the cost of continuous working. I cannot think it is sufficient to ventilate a building simply for the periods during which it is occupied and then to stop the mechanism and bottle up the air until the next period of occupation.

Let me illustrate this by directing your attention to a railway carriage. Standing still, how stuffy it often is, particularly in hot weather; but when rapidly moving along it is freshened up. Yet, on again standing still, it loses its freshness. That is an example of ventilation produced by mechanical means intermittently employed.

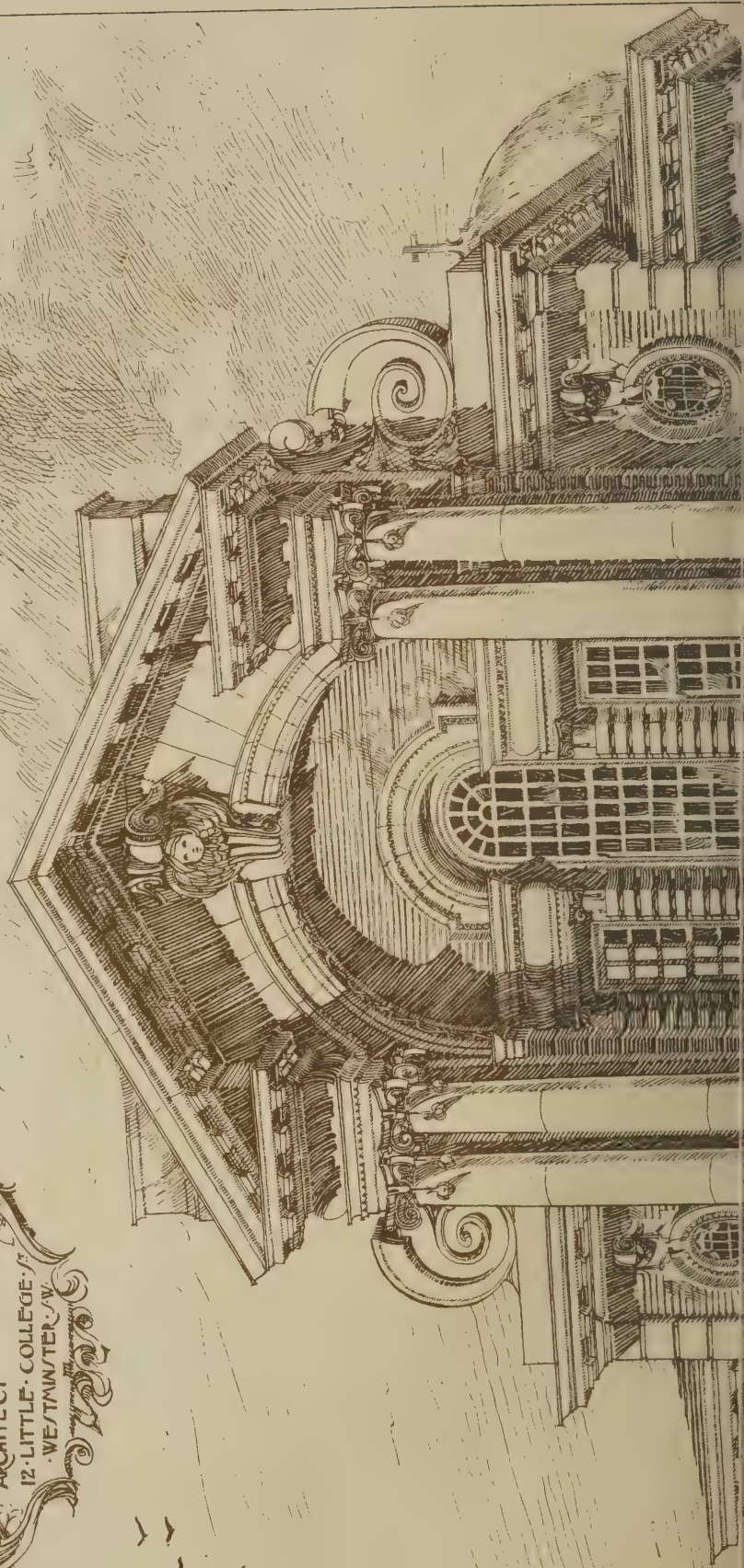
Now I wish to explode another fallacy.

Downward ventilation has been termed "downdraught," apparently in the hope of condemning it by giving it a bad name. Advocates of the open fire have stated that to propel air into the upper portion of a room and let it go out from the lower

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portion is unnatural. Fortunately this can be easily disproved. Take an ordinary room with an ordinary open fire and smoke flue. Test it as you will, and, apart from occasional strong winds setting up adverse currents, resulting at times in what are termed "smoky chimneys," it will be found that the only detectable outgoing of air takes place by the open fireplace flue, the lower opening of which is about 2ft. 6in. above the floor level. Many people open the upper portion of a window when the temperature of a room heated by an open fire is excessive, holding the idea that they are letting out the hot air; but with rare exceptions the temperature of the room is then actually lowered by letting in a larger volume of colder air, which compels a more rapid outgoing of heated air up the flue.

It is true that in most cases no special inlet for air is provided, and that in consequence air enters by any casual, and probably dirt-concealing holes, cracks and crevices--mostly around the lower portion of the room, whence it makes its way in narrow streams, moving with considerable velocity towards the fireplace, causing unpleasant draughts, while little change of air takes place in the upper portion of the room. Yet, if the same room were provided with a suitable inlet at a foot or two below the ceiling, on the same side as the fireplace and as central thereto as may be, the incoming air would become tempered by contact with the ceiling, walls, furniture, &c. -- previously warmed by radiant heat from the fire--it would by its inflow force the atmosphere of the room downwards towards the fireplace opening and up the flue to the open, without causing discomfort to occupants.* Under these conditions air is propelled into the room from a reasonable elevation, where it is generally fresher than near the ground-level and more free from chance contamination. Force of wind outside, varying as it does in intensity, will materially affect velocity of change within. I have therefore devised a simple automatic regulating inlet, consisting of a curved enclosure to a resistless flap hung eccentrically so that the area of the inlet opening is diminished proportionately to the force of wind playing against it; but satisfactory results can be obtained even without this refinement if the inlet be provided with louvres for distributing the air at low velocity. I am perfectly aware it is not the method usually adopted, nor is it the one recommended in most works on ventilation. Do not, however, condemn it without proper trial; think it out, and you will, I believe, come to the conclusion, as by practical experience I have, that it is most effective in securing the efficient ventilation of an apartment; and if so, then the relative positions advocated for inlets and outlets with the "plenum" system are correct.

Complaints being so frequent of defective ventilation--even in buildings where outlay has been incurred in the expectation of securing, let us say, comfortable ventilation by natural means--is it surprising, when we consider the marvellous results of mechanical power, now used for the benefit of mankind in almost numberless ways, that attempts should be made to employ it for improving the ventilation of buildings?

Mining operations and many occupations have for years been carried on which would have been impossible without the assistance of ventilation brought about by mechanical means. Thousands of power-driven rotary fans and air propellers are in daily use, proving the possibility of changing the air of enclosed spaces. Centuries ago the necessity for securing greater change of air within buildings than could at all times be naturally procured was recognized, and a few advanced minds suggested the employment

of bellows and other primitive appliances worked by hand or water-power. I have seen quaintly-illustrated treatises on the subject; and although failure doubtless resulted from inadequate knowledge and appliances, there is no reason why, with air-propellers and power appliances brought to the high state of perfection they are to-day, we should not take advantage of them for securing ventilation within buildings.

It is no argument to say, "I don't like plenum ventilation," or even to point to failures which have occurred; nor is it sufficient to bring forward some fanciful idea that in an undefined manner air moved by mechanical power is deprived of an unknown vital essence. It has been suggested that by warming air otherwise than by the sun's rays this intangible essence is destroyed, and that is given as a reason why some people condemn plenum ventilation; but it is altogether begging the question, because in summer-time, when "plenum" ventilation is so effective in maintaining a cooler atmosphere within doors than in the open, no heating is employed. Will it then be contended that, by lowering the temperature, such will-o'-the-wisp essence again disappears? Unfortunately my scientific knowledge is not sufficiently profound to enable me to determine if there is even an element of truth in these imaginings; but even if there be, which I strongly doubt, it is easy to demonstrate that with a carefully devised installation of "plenum" ventilation the necessary warming and cooling of air are affected with less chance of deterioration than by any other method. In addition to which, the air is drawn from sources known to be at a distance from contamination; it can be cleansed from suspended impurities, brought to suitable hygrometric condition, and passed on to apartments without contract with impurity.

I am, perhaps, as painfully conscious as anyone that there have been many failures with "plenum," and so there have been with every other method employed for securing ventilation; but my experience convinces me that failure is not the fault of the system, but that it results either from want of knowledge and experience on the part of those who installed it, or from neglect. It is only by careful comparison of results and a minute examination of the means and methods employed that a true estimate of its value can be ascertained. Personally I have not the faintest doubt that by the "plenum" system the efficient ventilation of a building can be effected. The principle is perfectly sound; yet I realize there are two sets of objections to be met: the first I class as purely fanciful, most of which I have already dealt with; the second are more tangible, and relate to the means and appliances which should be employed and the cost. To review all the means and appliances at disposal is quite out of the question on the present occasion, but they have a very decided influence, not only as regards partial or complete success, but also a direct bearing on the question of first cost and maintenance.

Much as I dislike making comparisons between the work of others and that with which I have been connected, this discussion has been forced on, and we are to meet in

the hope of gaining instruction which may be placed at the service of the public. Consequently I shall briefly compare, principally as regards costs of power employed, a few installations of plenum ventilation, and as I shall make use of information derived from printed particulars given by the engineers themselves, we shall at least have fairly reliable data (see table below).

Consider the importance of such a comparison as regards the number of changes of air affected per hour. May not success in great part depend upon giving an adequate change of air? And surely the question of cost would be a determining factor in many cases.

Reference to the paper by Mr. Henry Lea given in the Institute Journal for December 10th, 1903, will show how this economy in cost of power is effected. In the discussion which followed, Sir John C. Holder personally testified to the success of plenum ventilation in the General Hospital, Birmingham, which he has systematically visited, one may say almost daily, during and since its erection, and I could produce a large number of letters addressed to me containing congratulations on the satisfactory ventilation of that and the Royal Victoria Hospital, Belfast; but I prefer to place before you one because it was not written to me, and because it is from an architect experienced in hospital design, viz., Mr. Batchelor, of Messrs. Carroll & Batchelor, of Dublin, neither of whom is personally known to me. It runs thus:--

"I had been greatly interested in the accounts I read from time to time of the progress of the Royal Victoria Hospital, Belfast, and more particularly in the arrangements for heating and ventilating it. I have had some experience of the plenum system, and have never been much in love with it. I looked therefore rather with distrust on a building which had been so designed as to make such a system obligatory. Mr. Henman is to be complimented and congratulated on his courage in designing such a hospital, and I am free to confess that the result, so far as I was able to judge during my short visit, affords him ample justification for his inversion of many of the accepted canons in hospital design. I was particularly struck by the wonderful uniformity of the temperature maintained in the hospital throughout the twenty-four hours--such as could not, I believe, be obtained by natural means. The freshness of the air in the wards was remarkable, and there was a complete absence of that peculiar odour which is familiar to everyone having to do with hospitals. These results are obtained, I was glad to see, without draught, nor was there any perceptible movement of air in the wards. Everywhere I went through the hospital I saw evidence of great forethought and skill in design, particularly in those small details which count for so much in the economical administration of the institution. The building is a credit to the architects and also to the contractors, who have put such honest and--if I may use the expression--sympathetic work into it. Everything appears to have been done as well as it was possible to do it."

It has been well said that the only way to arrive at a right judgment as to the practical utility of plenum ventilation is to

Building.	Cubic feet of air per hour.	Change of air per hour.	Power.	Estimated h.p. power.	Annual cost for power	Annual cost per million cubic feet.
Glasgow, Art Galleries - - -	9 050,000	Not stated, probably 3 times.	Electricity -	66	£ 2,69. 3	£ 293
Manchester, Technical School -	12 000 000	3 1/2 "	"	80	3 274	269
" Midland Hotel -	6,000 000	3 "	"	40	1 6 2	269
Birmingham, General Hospital -	13 000,000	7 "	"	9	7 16	59
Belfast, Royal Victoria Hospital -	5 000,000	7 "	Steam	5 1/2	1 0	20

* See article on Ventilation in "Modern House Construction," vol. v. (Blackie & Son, Ltd., 1899).

* The costs of running are worked out proportionately to the amount of power, presuming it is employed continuously.

carefully examine it in a building in which it has been applied with knowledge and experience. All I ask, in conclusion, is that the subject may be approached without prejudice or regard to merely personal interest and fanciful misgivings, for a right understanding by the architectural profession on the subject of ventilation must have a vital influence on the health and well-being of the people.

The Discussion.

Mr. S. Perkins Pick criticized the construction of the Belfast Hospital erected by Mr. Henman. He said that with the hospital in separate blocks the usual system of a heating coil between each window was more pleasant to the patients. The ordinary atmosphere was so full of blacks and dust particles that it was desirable to cleanse it. He agreed that in some circumstances the plenum system was not only desirable but essential. The failures of the plenum system were usually due to the architects and not to the engineers, the plans having been produced without regard to the ventilating system. He then referred to the danger of the air being contaminated by defects in the drainage system, which he thought had not been taken proper account of in the Belfast Hospital.

Mr. Saxon Snell thought it was a pity the subject had been so canvassed by trade firms. He had no bigoted objection to the plenum system. Operating theatres he believed could only be ventilated properly by the plenum system. But it was his opinion that ventilation in a downward direction was scientifically wrong, for the line upon which to move the air was the line of least resistance and this was upward, as hot air rose, and "natural" ventilation took advantage of this. But hot air was wrong, he thought, because less oxygen was breathed at each inhalation. The evenness of temperature was claimed as an advantage with the plenum system, but this was praising monotony, while air being kept from the light enabled microbes to multiply in the ducts. Mr. Henman had made an improvement in keeping the ducts above ground.

Dr. Samuel Rideal thought Mr. Snell's speech had not showed a very scientific treatment of the subject. They had to deal with the ventilation of buildings in a confined space in towns, and he thought that then the open window was not the method to commend itself to us, but artificial means must be employed. He thought the forcing in of the air commended itself more than the extraction of the air. If the germs collected and multiplied in the ducts then the proper course to pursue was to purify the air before it came into the hospital. As the air was germ-free, dust-free and humidified to the proper temperature, these were advantages against the disadvantage of less oxygen per respiration, and physiologists would assert that persons would breathe a little quicker to make up for the loss. He had been investigating the deleterious effects of sulphur in the atmosphere produced by gas, and he had found that less sulphur came from gas fires than from the open coal fire. With ordinary plastered walls the carbonate of lime served as a very good sulphur absorbent, and in ordinary rooms the use of coal was not a very serious danger. He referred to Mr. Aitken's "Conoscope," which he considered was a very easy means of determining the number of dust particles in the air of a room and could be easily used by architects.

The Rev. J. B. Lock, B.A., said that it had recently been necessary to decide on the ventilation of certain rooms at Cambridge and the plenum system had been chosen for the medical school as being certain and constant in its supply of air. The vacuum was a rule-of-thumb affair; there was a great chimney for extraction, and one simply made openings into it and hoped for the best.

At the Leeds Medical School a shaft was fixed with an iron pipe in the centre to take away the products of combustion, but it was found that air drawn from the lower rooms percolated in the upper rooms, and the smell from the dissecting-room could be distinguished throughout the building. Nevertheless, he thought that in certain cases it was impossible to do without plenum ventilation, and he cited Pitman's School of Shorthand in Southampton Row, where a room used by one thousand men and women all through the day was kept fresh by the fan in the basement. He ridiculed the idea that it would be possible to ventilate such a building throughout the year by "natural ventilation," which depended on wind blowing always in the same direction, as on a ship, with its ventilators.

Mr. W. Kaye Parry referred to the weight of air to be moved. At the lecture theatre of the Royal Dublin Society twenty tons of air were removed in an hour, and it would be impossible to do so without mechanical means. If instead of the plenum arrangement, radiators were used there was a difficulty of keeping them clean—they were ten times more insatiable than air passages.

Mr. Harold Griffiths, A.R.I.B.A., was of opinion that for city buildings densely occupied the plenum was the right system: but there were four matters to bear in mind. First, as to air-screens. He did not favour those of jute and cocoa-nut fibre as used by Mr. Henman at Belfast. Such screens, after a few months, became choked with impurities and it was impossible to clean them with a hose or any other means. Revolving screens were better, though not perfect. He hoped on another occasion to show a better way. The second point was the dust. Ordinary gill pipes could not be washed, and he advocated that they should be galvanized and arranged so that they could be swilled with water at least once a week. The third point was the velocity of the air admitted. This should never be below 4 ft. nor over 5 ft. per second in summer and 5 ft. and 6 ft. in winter. Fourthly, there was the question of inlets and extracts—the former should send the air well up to the ceiling, and the latter should not be throttled as in almost all plenum systems.

Mr. E. W. Hudson, Mr. A. E. Munby, Mr. Max Clarke and Mr. Aston Webb also spoke. Mr. Clarke said that no automatic method would ventilate a building properly. The great point in doubt was, however, whether the "essence" of fresh air was changed by mechanical treatment. Mr. Webb said that personally he was of opinion that undoubtedly the only way to ventilate crowded rooms with a continuous change of air was by the plenum system.

The Elections.

At the business meeting which preceded the general meeting at which the foregoing discussion took place the following elections were made:—

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G. Hornblower E. R. Hewitt
W. E. Riley G. Pearson
H. D. Searles-Wood A. D. Watson

The following were elected:—As Fellows: T. Arnold (Edinburgh), W. A. Catlow (Leicester), Max Clarke (London), A. O. Collard (London), W. H. Duncan (Rochdale), E. Goldie (London), A. H. Hart (London), C. G. Johnson (Mexico), W. Campbell Jones (London), W. A. Large (London), T. E. Marshall (Harrogate), J. C. T. Murray (London), J. H. Phillips (Cardiff), A. Roberts (Greenwich), W. Rushworth (Croydon), P. B. Tubbs (London), J. C. Tully (Cape Town), B. Woollard (London). As Associates: C. Rosenthal (Sydney, N.S.W.) and H. A. Hall (London). As Honorary Associates: J. J. Shannon, A.R.A., and Lord Stanley of Alderley. As Honorary Fellow: Lord Curzon of Kedleston.

It was resolved that the following words be added at the end of the first clause of by-law 3: "After December 31st, 1906, every person desiring to be admitted as a Fellow shall be required to have passed the examination or examinations qualifying him as an Associate, or shall be elected from the ranks of the Associates. But in special cases the Council by the votes of three-fourths of such members of the Council as are present and voting at a meeting of the Council shall have power to dispense with such examination or examinations."

It was announced that the next meeting of the Institute (the last of the session) would be held on June 20th, at 8.15 p.m. instead of 8, as usual. The Institute memorial to the late Mr. Penrose, in the crypt of St. Paul's Cathedral, will be unveiled by Sir Lawrence Alma-Tadema on Saturday afternoon, June 18th, at 3.30.

Bricks and Mortar.

Aphorism for the Week.

No man who consents to the destruction or the mutilation of an ancient building has any right to pretend that he cares about art.—
WILLIAM MORRIS.

Our Plates. PARTICULARS of Branches Park, Newmarket, will be found on p. 268 of this issue.—The drawing of the new west front for a church at Peckham is exhibited at the Royal Academy this year. It shows a portion of the design for large external and internal alterations and additions to a Georgian church. The actual erection of this new front has been postponed by the necessity of first making provision for internal alterations and decorations, upon which the available funds have been expended, the work having been carried out at a cost of about £3,000 by Messrs. J. W. Falkner & Sons, builders, of London. The front is to be built in Portland stone and gauged brickwork. The architect is Mr. H. P. Burke-Downing, F.R.I.B.A., of 12, Little College Street, Westminster.

Bellevue Hospital, New York. THE new Bellevue Hospital proposed for New York is designed to occupy three city blocks, from Twenty-Sixth to Twenty-Ninth Streets and First Avenue to the East River. It is claimed that it will be the largest, finest and most completely equipped hospital in the world. It will accommodate 2,500 patients, and quarters are to be provided for over 100 physicians. The building material is to be Harvard brick with light stone trimmings. The building will be H-shaped, and from the prospectus that has been prepared by the architects is not in general outline unlike the Capitol at Washington. The main part of the hospital will be 150ft. or more back from the river, with wings running out on each side, forming a large court. The thirteen pavilions will be under one roof, but between them will be covered arcades to allow free circulation of air. With the exception of the dome over the main part of the building, and the curved roofs over four of the pavilions, all the roofs are flat. Roof gardens will be used by convalescents, and will have temporary wards for 100 patients. The five upper floors of the south wing will contain the medical wards. The limit of each ward will be twenty-five patients. The five upper floors of the north wing will contain the surgical wards. The surgical amphitheatre will be equipped with ten small operating rooms, all within easy access of the various wards. The hydropathic department, designed to surpass that of any other institution, will be on the ground floor of the central pavilion. It will be equipped with all modern apparatus for the treatment of disease by water, and will be one of the most remarkable new features of the hospital. Each of the ninety-two wards will have either an open or an enclosed balcony of sufficient size to accommodate all the patients in each ward at one time.

A Consumption Hospital.

THREE new pavilions have been added to the Victoria Hospital for Consumption at Craigleith, Edinburgh. Of these, two contain twelve beds in two wards of six beds each, and one contains eight beds in two wards of four beds each. The pavilions are entirely separated from each other, and each is built in the shape of the letter Y, the arms of the latter containing the wards and of course facing the south, while the upright part of the letter contains the nurses' room and offices, and runs northwards. The wards are 29ft. long, 23ft. wide and 12ft. high,

which gives nearly 1,400 cub. ft. per bed; but mere cubic feet is not a matter of any great importance, says the "Hospital," in a ward where windows and doors are never closed, and where cross-ventilation has been attended to, and where the window space is ample. The walls are of brick and are double, there being a cavity of 2½ in. between the outer wall of 9 in. and the inner one of 4½ in. Inside, the walls of the wards are lined with Keen's cement and the bathrooms with tiles. The floors are of concrete and steel joists, and a coating of asphalt has been placed between the concrete and wood. The cost of the three pavilions has been about £7,000. The committee of management desire to have 100 beds for the treatment of consumptives, and they appeal for further funds to enable them to erect five additional pavilions. Of the thirty-two beds just added it is intended that eight will be reserved for patients able to pay 21s. a week each, but the others are free. The architects were Messrs. Mitchell & Wilson, of Edinburgh. Commenting on the plan the "Hospital" says: "The decision to make each unit of the sanatorium small was undoubtedly a good one; indeed, we hold this view so strongly that we should like to have seen the units even smaller than they are, and more like the single-bedded huts found at some sanatoria—we believe at Craigleith among others. It is more than probable that some form of hut will be the development of the future for the treatment of phthisis, and the parent buildings will become little more than administrative centres. But where pavilions have to be constructed much might be said in favour of the form which these have taken."

Law Cases.

Liability for Defective Drains.—At the West London Police Court a summons was recently brought against Mrs. Nunn, of Clapham, in respect of an alleged defective drain at 45, Melrose Gardens, West Kensington. Mr. A. B. Watson supported the summons on behalf of the Hammersmith Borough Council; and Mr. Stuart Bevan, barrister, represented the defendant. Complaint was received from the occupier of the house about bad smells, and the sanitary inspector made a test and found a leakage. Notice was then served on the owner containing a detailed account of the work necessary to be done to remedy the defect. Mr. Watson pointed out that the owner had not availed himself of the right of appeal to the London County Council as provided in section 211 of the Metropolis Management Act, and, therefore, according to the decision laid down in *Clerkenwell Vestry v. Feary*, the only question for the magistrate to decide was whether the notice was properly made out and served. Mr. Stuart Bevan contended that, inasmuch as the requirements set out in the notice really amounted to a reconstruction of the whole drainage system in the house, the question of the validity of the notice was quite within the province of the magistrate. The requirements were precisely similar to those established under the London County Council's regulations of 1901; and as the latter only applied to new buildings, the borough council were clearly endeavouring to put on the owner an obligation that was not even imposed by the London County Council. The borough council could, if the drains were irreparable, have instituted proceedings under the Public Health (London) Act in respect of a nuisance. Mr. Rose decided on the point of law that the notice was a construction notice, and therefore liable to revision at his hands; he held that the notice was invalid and dismissed the summons.

Enquiries Answered.

The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Buildings to Measure for R.I.B.A. Examination.

LONDON.—FINIAL writes: "Kindly give me a list of buildings round about Lee, Blackheath or Greenwich suitable to measure for the R.I.B.A. final examination. Are there any almshouses, lecture-halls or old houses in these districts?"

Without going a little further from London there is little suitable work to be found. The hall of the old Bishop's Palace at Eltham should, however, be within reach, while Stone Church, close to Greenhithe, is within a short railway journey, this being one of the most beautiful small thirteenth-century churches in the country. M.

Indicators for Libraries.

WISBECH.—F. B. W. writes: "Who is the maker of Cotgreave's indicators for public libraries?"

The sole agent for the indicators invented by Mr. A. Cotgreave, chief librarian of the West Ham public libraries, is Mr. W. Morgan, 21, Cannon Street, Birmingham.

Street Improvements.

ABERDOVEY.—A. S. writes: "I am qualifying for the post of building inspector. Where can I obtain information about the method of proceeding to widen and improve a public street, naming the various Acts and clauses?"

You should purchase "Municipal Engineering—model answers to questions set at recent examinations of the Incorporated Association of Municipal and County Engineers," price 3s. 6d. post free from our offices. On p. 56 you will find all the particulars required, and the book will be very useful to you.

Ground Rent.

A. writes: "What terms of duration and ground rent could be fairly asked in a proposal to lease about half an acre of land in good position adjoining highway, for the erection of a cottage to cost from £300 to £400? The land is let at the rate of £1 per acre. The site is near a village and railway station, in a district frequented by visitors and where a house could readily be let."

This is rather a question for the professional opinion of a valuer who is personally acquainted with the locality, but I will answer it in general terms. The duration of lease may be 40, 60, 99 or 999 years, 99 years being perhaps the most usual term. Conditions of lease.—It is usual to stipulate that the land shall be used for certain purposes only, and of course these stipulations must be taken into account when fixing the amount of annual ground rent. Very general conditions are (a) that property of a certain annual value (or costing a certain sum) shall be erected on the land; (b) that certain buildings, such as chapels, public-houses, shops and trade premises (especially those for noxious purposes) shall not be placed on the land; (c) a building line may be laid down; (d) provisions as to fire insurance, repairs, &c. As regards the amount of annual ground rent, in your case it appears that land now producing 10s. per year for agricultural purposes is to be leased for the erection of one cottage only. It follows therefore that the land will not carry so large a ground rent as if it were capable of being covered more completely. I would suggest a lease of 99 years at an annual ground rent of about £3. In this connection,

I may mention that a safe rule is to expect a freehold ground rent to be secured about seven or eight times over by the rack-rental of the property; this means that if the whole of the premises (land and buildings) be let at from £7 to £8 per annum the ground rent should be about £1. F. S. I.

Vacancies in Borough Surveyors' Offices.

BIRMINGHAM.—W. G. writes: "Is there any list published of vacancies in borough and town surveyors' offices in England and Wales?"

We know of none. We advise you to consult the advertisement columns of the various trade papers.

Woodworking Machinery.

WIMBLEDON.—LONDON writes: "Please recommend a good practical book on woodworking machinery."

"Sawmill Work and Practice," by W. J. Blackmur, 3s. 6d. post free from our offices.

Keystones.

The Electrified District Railway will be ready by the beginning of 1905. The power station at Chelsea is expected to be able to furnish current for traction during the present year.

A Serious Landslip at Cromer, the largest that has taken place for some years, occurred opposite the lighthouse last week. It is estimated that 100,000 tons of cliff fell on to the beach.

New School for Worthing: Local Competition.—A competition among local architects is to be held for a new school for girls and infants at Worthing. Each department is to accommodate 250 children. The school is to be of one floor only.

Ulster Society of Architects.—At a general meeting held last week at Belfast a discussion took place with reference to certain members of the staff of the Improvement Committee practising as architects. It was decided to write to the Corporation to ask them to consider the matter.

A new Parish Church at Great Warley, Essex, has been erected under the general advice of Mr. W. Reynolds-Stephens, who called in Mr. Harrison Townsend as architect. Six double side windows of the nave and the west rose window are by Mr. Heywood Sumner.

The Nave of Belfast Cathedral was consecrated last Thursday. This has involved an expenditure of over £30,000, but the entire edifice will cost about £100,000. The foundation-stone was laid in 1899. Sir Thomas Drew is the architect. The plan of the cathedral is a symmetrical Latin cross.

Competition for Perth Fever Hospital.—Mr. Aldwinckle, the assessor in this competition, has made the following awards:—First, Mr. G. P. K. Young, Perth; second, Mr. Granger Heiton, Perth; third, Mr. D. Thompson, junr., Brighton. The following were highly commended:—Mr. James Marshall, Perth; Menart & Jarvie, Perth; Mr. T. M. Cappon, Dundee.

A new Central Fire-Station at Worthing has been erected in High Street from the designs of the borough engineer and surveyor, Mr. Frank Roberts, A.M.I.C.E. On the ground floor is an engine-house 32ft. by 30ft., lined with glazed bricks and paved with clinker bricks, and at the rear a yard for drill and other purposes. On the first floor there is a firemen's recreation-room 24ft. 6in. by 17ft., and the officer's house. A hose-drying tower 44ft. high is provided. Externally the buildings are faced with local bricks and Bath stone cornices and dressings.

The new South Park at Fulham has been designed and laid out by the borough engineer, Mr. Francis Wood, A.M.I.C.E., F.G.S.

Mr. J. Thomson, assistant burgh engineer, Dundee, is to carry on the work of the late city architect (Mr. William Alexander) until a permanent appointment is made.

Liverpool Cathedral: Foundation-stone Laying.—It is expected that His Majesty the King will go to Liverpool in the second week of July to lay the foundation-stone of the new cathedral.

The Municipal Technical Institute at Belfast is to have another storey. Mr. S. Stevenson is the architect and Messrs. W. J. Campbell & Son are the contractors. The cost will be about £15,000.

New Baths and Washhouses in the Old Kent Road are being erected by the Borough Council of Camberwell at a cost of £55,000. The accommodation provided includes two swimming baths, 98 men's and women's baths, a Russian bath, a Turkish bath and a public washhouse for forty-four persons.

M. Bouvard, the city architect of Paris, is about to deal with the Esplanade des Invalides, the Champ de Mars and the banks of the Seine. He is of opinion that enough has not been made of the river, and he is planning gardens and terraces which will lighten the severity of the stone embankments.

A Colossal Bronze Statue of the Emperor Septimius Severus, found in the moat of the Castle of St Angelo during the Papacy of Urban VIII., has been bought at £16,000 for the National Museum of Belgium. It was included among the antiquities and works of art of the late M. Somzee, reputed to be the finest private collection in Europe, which were recently brought to the hammer in Brussels.

Distinctions from the Czar.—In connection with the recent International Fire Prevention Congress the Czar has conferred upon Mr. Edwin O. Sachs the gold medal for services with the ribbon of the Order of St. Vladimir, and upon Mr. Ellis Marsland the gold medal for services with the ribbon of the Order of St. Stanislas. His Majesty the King has been graciously pleased to accord Mr. Sachs and Mr. Marsland permission to wear these medals.

Competition for Open-Air Sanatorium, Barrasford, Northumberland.—The plans of Messrs. Nicholson & Dotchin, architects, of Clayton Chambers, Newcastle-on-Tyne, have been selected for this sanatorium, proposed to be erected by the Northumberland Branch of the National Association for the Prevention of Consumption. Building operations will be begun without delay. There will be accommodation for 100 patients in separate rooms, together with isolation hospital, &c.

"Specification No. 7."—We have to state that the matter in the "Structural Engineer" section of "Specification No. 7" was compiled and calculated by Mr. Alexander Drew, C.E., M.I.M.E., consulting engineer (constructional and electrical), of 154-6, Temple Chambers, Temple Avenue, London, E.C., with the exception of the notes on joists and stanchions additional to those appearing in "No. 6," which were contributed by Mr. A. T. Walmisley. We regret the omission of Mr. Drew's name.

The Wentwood Waterworks for Newport, Mon., have now been completed under the supervision of Mr. Baldwin Latham, C.E. The reservoir has a dam 800ft. long and 500ft. wide at its base; in parts the foundations, which are of concrete, are 208ft. deep. The reservoir covers 40 acres, has a greatest depth of 90ft. and a capacity of four hundred million gallons. Owing to difficulties with the foundations the cost has risen from £120,000—the amount which Parliament first sanctioned—to £406,000.

Competition for Central Wesleyan Hall, Sheffield.—The assessor, Mr. E. M. Gibbs, F.R.I.B.A., has awarded the first premium of 100 guineas to Messrs. Waddington, Son & Dunkerley, Manchester; the second of fifty guineas to Mr. W. T. Hale, F.R.I.B.A., Sheffield; and the third of twenty-five guineas to Messrs. Crouch & Butler, of Birmingham. There were nine competitors. The hall is to seat 2,500 persons and will cost £25,000.

A.A. of Ireland.—Mr. James H. Webb has been elected president for the next session and Messrs. George F. Beckett and A. G. C. Millar vice-presidents. The prize-winners are as follows:—Association Travelling Studentship, Mr. R. Donnelly; Institute prize, Mr. R. Donnelly; president's prize, Mr. G. G. Lyles; Mr. Harry Allhovey's prize, Mr. Vivian Haghe. Architectural History Class: 1st, Mr. J. W. Beckett; 2nd, Mr. J. Moore. Class of design: 1st, Mr. H. G. Leask; 2nd, Mr. Vivian Haghe.

A Suggested Improvement for Whitby.—Some years ago Capt. William Jefferson suggested a scheme for maintaining the water above the bridge at Whitby at half-tide level, as a minimum, this being effected by a caisson placed in a dock between the buttresses of the central archway. The caisson would be a fixture so long as there was 7ft. of water at the bridge, but with greater depth, on the rising tide, would float, and be drawn alongside when the depth reached 9ft. A plan and water-colour drawing of the scheme, made by Mr. George S. French, architect, of Whitby, are now shown at the offices of the "Whitby Gazette."

A new High School for Girls at Abingdon is to be built on an extensive site on the Faringdon Road, at a cost of £23,135, by the Community of Wantage Sisters. The school is planned on the central-hall system, with classrooms arranged on three sides. The hall is 50ft. long by 27ft. wide and 25ft. high inside. Accommodation is provided for 200 scholars, including forty boarders. Mr. F. L. Pearson, of London, is the architect; the contractors are Messrs. Willcock & Co., of Wolverhampton. Sewage, gas and water pipes will be laid from the town, the Local Government Board having sanctioned a loan of £4,080 on the part of the town council to carry out this work.

New Block of Offices in Westminster.—The contract for a block of offices to be called "Parliament Chambers" facing the Church House and adjoining the Westminster City Library, Great Smith Street, has been signed. Messrs. L. Whitehead & Co., Ltd., are the contractors, and the work is to be commenced at once and completed in twelve months, from plans approved by the Ecclesiastical Commissioners, who are the superior landlords. Messrs. Palgrave & Co., of Westminster, are the architects. The building will have a frontage of 125ft. to Great Smith Street, and will be faced with red bricks and terracotta dressings of special manufacture by the Hathern Station Terra-Cotta Co., Loughborough. The construction will be fireproof and the various upper floors will be approached by electric lifts.

Obituary.

Mr. W. T. Creed, architect, aged 64, while sitting in the grand circle at Drury Lane Theatre recently was taken ill and died from syncope within five minutes.

Mr. W. A. Royle, F.R.I.B.A., of Manchester, died recently. He succeeded to the practice of the late Mr. Philip Nunn and joined with Mr. R. I. Bennett as a partner. Mr. Royle carried out a large amount of work for the Manchester School Board, and also designed numerous offices and warehouses in the city. He was twice elected president of the Manchester Society of Architects.

Trade and Craft.

Water-Paints.

There is a conservatism in Englishmen to deprecate innovations, if not exactly to disregard them, and this applies particularly to architecture and the building trade. And then, compelled by the advantages offered, a momentous change may be wrought without their apprehension, until they suddenly wake to find their old associations displaced from the leading position they once held. It is so with paint. We have already seen the unhealthy lead base rapidly displaced by zinc white. The objection to oil paints has been their glossiness, while their advantage has been resistance to damp. Distemper or water-paint has been used from time immemorial—traces of it are found in early Egyptian work, in Greece, at Herculaneum and at Pompeii, and under the name of tempera it has been employed by the greatest painters. Its adoption is chiefly due to the beautiful soft matte surface it possesses, and were it not subject to damp and could be washed, and applied to wood, it would doubtless have been foremost as a finish for walls and ceilings.

Within the last five years we have seen oil paint ousted by washable distemper from many of the positions which it once held. The distemper patented by Mr. W. A. Hall, of Bellows Fall, Windham, Vermont, U.S.A., in 1896, and manufactured in this country by Messrs. Sissons Brothers & Co., Ltd., of Hull, has within the comparatively short time it has been on the market largely superseded oil paint for many purposes and gives promise of being used still more extensively in the future, for it seems as good as oil paint in every situation. Hall's washable distemper dries so hard in three weeks that it is not affected by boiling water. It can be used on wood, and acts as a filling, giving a better surface to the wood; moreover, it prevents paint blistering if used as a priming coat on new or burnt-off woodwork, while, owing to its greater covering power, it saves one of the finishing coats of paint. Most important is its cheapness, for 1 cwt. covers twice the surface covered by one coat of pure white lead, with half the labour, and oil and turpentine are saved as well. It is particularly noticeable that, whereas ordinary distemper flakes off where there is the slightest suspicion of grease, Hall's water-paint may be used on old greasy paint without previous preparation, and afterwards painted with oil colours if desired.

Hall's invention consists of a base composed of silicate of magnesia or talc and an adhesive made from casein and lime in the proportion of 90 per cent. base and 10 per cent. adhesive. Whiting may be substituted for talc in the base up to 40 parts whiting and 50 talc. The specific value of the invention lies in the casein adhesive. Casein is an organic glutinous substance obtained from milk, and is better known as the curd. It is insoluble in water but is dissolved by alkalis. The alkali used in Hall's distemper is slaked lime from chalk or magnesia (dolomite), which alone appear to enter into a chemical combination that forms an insoluble compound upon exposure to air for a few days, thus allowing the surface to be washed and enabling the distemper to be used outside. Colours are incorporated with it as desired. It has no colour limit and is made in rich deep colours as well as tints, unlike the usual distemper, washable or otherwise. Casein belongs to the class of proteid matter the peculiarity of which is that, though organic, it does not easily decompose and when non-living will remain for years without undergoing decomposition. It is worthy of note that white of egg, used by the old fresco painters, and which has been proved a most lasting medium, is a proteid. The paint

therefore has not the objectionable smell which the size in ordinary distemper gives, and affords a surface which is practically microbe-proof. A certain percentage of cresylic acid (liquid carbolic acid) is contained in the paint ($\frac{1}{2}$ per cent. if desired), and as the antiseptic properties of this acid are more marked than phenol (carbolic acid) Hall's distemper is of great utility for painting the walls, ceilings, &c., of hospitals, fever wards, and generally after cases of infectious diseases, besides which of course it can be very easily cleaned.

Containing no lead, it is not blackened by sulphur fumes, is non-poisonous, and is particularly suitable for interior use. Hall's distemper may be put upon damp walls, when it will stand better than oil paint. It will not scale off and is far preferable to the ordinary whitewash for ceilings. It is free from excess of caustic or alkali, only just sufficient to render the casein soluble being present. The distemper is sold in air-tight tins or in bulk. To mix for use, about one pint of water is added to every 5lbs. of distemper. Either hot or cold water may be used, but hot is recommended, especially if the distemper has become somewhat stiff. Whiting or lime should be washed off walls and ceilings before applying the distemper, but wallpapers may be painted over, though two coats will then probably be required; which is noteworthy when it is remembered that walls must be thoroughly washed free from all grease, smoke grime, stale paste, size, &c., before ordinary distemper can be made to stand.

Before coating a ceiling the plaster should be brushed over with water or a very thin coating of the distemper, to prevent the suction which absorbs moisture, thereby weakening the binding properties of the distemper. When walls are very porous or repaired, causing much unequal suction, a coat of size is recommended before applying the distemper. For very damp walls Messrs. Sissons Brothers & Co. supply a damp resister which is used for the first coat.

In the ordinary way stopping is a trouble, for if it is not coloured it shows patchy, and if distemper is mixed with the stopping it shrinks and looks still worse, but with Hall's washable distemper its admixture with the stopping material is advisable. Cream should be used for mixing instead of white when lightening other colours. One coat gives an even and solid colour and is equal to two of oil paint, but care must be taken not to add too much water, as the distemper should be applied thickly. This contrasts with the two coats needed of ordinary distemper. The brush should be used all one way, especially in the finishing stroke, as a cross stroke will show when the work is dry.

Two qualities are supplied, one for inside and the other for outside use.

A neat little book of colours is issued, showing seventy tints which are notable for their delicacy and harmony, and also for strength and richness in the deeper tints. Shades marked with an asterisk may be used for new plaster walls and are quite unaffected by caustic lime. A stippled finish is often thought to be the only proper one for distemper, but this is unnecessary, as an even surface can be obtained without it, and a stippled surface is inconvenient to work on with pencil or fitch.

The London office and stores of this old-established firm, who have a great reputation as varnish, paint and colour manufacturers, is at Layton's Buildings, 199B, Borough High Street, S.E.

"Maximum Light Glass."

In our article on this form of prismatic or refractive glass the size in which sheets could be obtained should have been stated as 8oin. by 6oin., not 18in. by 6oin.

Current Market Prices.

		£	s.	d.	£	s.	d.
FORAGE.							
Beans	per qr.	1	14	0	2	0	0
Clover, best ..	per load	4	0	0	4	7	6
Hay, good ..	do.	3	12	6	4	0	0
Sainfoin mixture ..	do.	3	12	6	4	2	6
Straw	do.	1	12	0	2	2	0

		£	s.	d.	£	s.	d.
OILS AND PAINTS.							
Castor Oil, French ..	per cwt.	1	0	5	—	—	—
Colza Oil, English ..	do.	1	2	0	—	—	—
Copperas	per ton	2	0	0	—	—	—
Lard Oil	per cwt.	2	15	0	2	17	0
Lead, white, ground, carbonate ..	do.	1	4	10	—	—	—
Do. red	do.	1	0	4½	—	—	—
Linseed Oil, barrels ..	do.	0	16	0	—	—	—
Petroleum, American ..	per gal.	0	0	5½	0	0	6
Do. Russian	do.	0	0	4	0	0	5
Pitch	per barrel	0	8	0	—	—	—
Shellac, orange ..	per cwt.	13	15	0	—	—	—
Soda, crystals ..	per ton	3	2	6	3	5	0
Tallow, Town ..	per cwt.	1	2	0	—	—	—
Tar, Stockholm ..	per barrel	1	1	6	—	—	—
Turpentine	per cwt.	2	1	6	—	—	—

		£	s.	d.	£	s.	d.
METALS.							
Copper, sheet, strong ..	per ton	72	0	0	—	—	—
Iron, Staffs, bar ..	do.	6	0	0	8	0	0
Do. Galvanized Corrugated Sheet ..	do.	10	5	0	10	7	6
Lead, pig, Soft Foreign ..	do.	11	13	9	—	—	—
Do. do. English common brands ..	do.	11	17	6	—	—	—
Do. sheet English 3lb. per sq. ft. and upwards ..	do.	14	0	0	—	—	—
Do. pipe	do.	15	0	0	—	—	—
Nails, cut, clasp, 3in. to 6in. ..	do.	9	5	0	—	—	—
Do. floor brads ..	do.	9	0	0	—	—	—
Steel, Staffs, Girders and Angles ..	do.	5	5	0	6	5	0
Do. do. Mild bars ..	do.	6	0	0	6	5	0
Tin, Foreign	do.	123	10	0	124	0	0
Do. English ingots ..	do.	125	0	0	126	0	0
Zinc, sheets, Silesia ..	do.	24	10	0	—	—	—
Do. do. Vieille Montaigne ..	do.	25	0	0	—	—	—
Do. Spelter	do.	22	2	6	22	7	6

		£	s.	d.	£	s.	d.
TIMBER.							
Soft Woods.							
Fir, Dantzic and Memel ..	per load	1	13	0	3	0	0
Pine, Quebec, Yellow ..	do.	5	5	0	6	5	0
Do. Pitch	do.	2	5	0	3	0	0
Laths, log, Dantzic ..	per fath.	4	10	0	5	10	0
Do. Norrköping ..	per bundle	0	0	7½	—	—	—
Deals, Nederkalix, Yellow, 1st, 3x8 ..	per std.	9	15	0	—	—	—
Do. do. 2nd, 3x8 ..	do.	8	15	0	—	—	—
Do. Norrköping, Yellow, Unsorted, 3x7 ..	do.	8	0	0	—	—	—
Do. Räfsö, Yellow, 1st, 3x9 ..	do.	14	15	0	—	—	—
Do. do. do. 2nd, 3x9 ..	do.	12	15	0	—	—	—
Do. Archangel, Dry Yell., 3rd, 3x11 ..	do.	11	5	0	—	—	—
Do. do. do. 2nd, 3x8 ..	do.	12	5	0	12	10	0
Do. Rigo, White, Unsorted, 3x11 ..	do.	7	15	0	—	—	—
Do. Montreal Dry Red, Pine, 1st, 4x11 ..	do.	17	5	0	17	10	0
Do. do. do. 3x11 ..	do.	16	11	0	—	—	—
Do. do. do. 3x9 ..	do.	13	10	0	—	—	—
Do. do. do. 2nd, 3x11 ..	do.	12	10	0	—	—	—
Do. do. do. 3x9 ..	do.	11	15	0	12	0	0
Do. Miramichi, Dry Yellow Pine, 1st, 3x9x13ft. ..	do.	6	10	0	—	—	—
Do. do. 3x7x11ft. ..	do.	6	5	0	—	—	—
Do. do. 3x7x10ft. ..	do.	6	0	0	—	—	—
Do. Quebec Yellow Pine, 3rd, 3x9x12ft. & 13ft. ..	do.	10	5	0	—	—	—
Do. Quebec Bright Pine, 3rd, 3x6x9ft., 10ft., & 11ft. ..	do.	8	0	0	—	—	—
Do. Mobile Rio Pitch Pine, 3x9 ..	do.	9	0	0	9	5	0
Battens, all kinds ..	do.	6	5	0	12	5	0
Scantlings	do.	6	10	0	9	15	0
Flooring Boards in preparation, 1st ..	per square	0	9	6	0	12	6
Do. 2nd	do.	0	8	6	0	9	9
Do. 3rd, &c. ..	do.	0	8	0	0	8	3

		£	s.	d.	£	s.	d.
HARD WOODS.							
Ash, Quebec	per load	3	12	6	—	—	—
Birch, Miramichi, Planks, 3x5 to 16in. ..	per cu. ft.	0	0	11½	—	—	—
Box, Turkey	per ton	15	0	0	20	0	0
Cedar, Cuba	per ft. sup.	0	0	4½	—	—	—
Do. Honduras ..	do.	0	0	4	—	—	—
Do. Tobasco ..	do.	0	0	5½	—	—	—
Elm, Quebec	per load	4	2	6	—	—	—
Mahogany, Average Price for Cargo, Honduras ..	per ft. sup.	0	0	4½	—	—	—
Do. African ..	do.	0	0	4½	—	—	—
Do. St. Domingo ..	do.	0	0	3½	—	—	—
Do. Cuba	do.	0	0	2½	0	0	3½
Do. Lagos	do.	0	0	3½	—	—	—
Do. Benin	do.	0	0	3½	—	—	—
Do. Tobasco ..	do.	0	0	5½	—	—	—
Oak, Libau, Crown Wainscot logs ..	per load	2	15	0	—	—	—
Do. Flume round logs ..	do.	3	7	0	—	—	—
Do. Quebec	do.	4	10	0	—	—	—
Teak, Rangoon, planks ..	do.	8	0	0	15	10	0
Do. do. logs ..	do.	11	5	9	—	—	—
Do. Indian planks ..	do.	12	5	5	—	—	—
Do. Moulmein logs ..	do.	6	10	0	8	0	0

Complete List of Contracs Open.

DATE OF DELIVERY	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
BUILDING:			
June 9	Carnkie, near Redruth—Church	Trustees, Wesleyan Methodist Congregation	S. Hill, Architect, Green Lane, Redruth.
" 9	Leicester—Pumping Station	Sewage Works and Farms Committee.	E. G. Mawbey, Borough Engineer, Town Hall, Leicester.
" 9	Penzance—Hospital and Dispensary	District Council	O. Caldwell, Architect, Victoria Square, Penzance.
" 9	Soothill, Nether—Walls, &c.	—	Surveyor, Council Offices, Earlsheaton, I.
" 9	Barnard Castle—Alterations and Additions	—	T. Farrow, Architect, Barnard Castle.
" 10	Enniskillen, Ireland—Alterations to Protestant Hall	—	T. Elliott, Architect, Darling Street, Enniskillen.
" 10	Belfast—Superintendent's House	Victoria Hospital	S. P. Close, Architect, Donegall Square Buildings, Belfast.
" 10	Cardiff—Nurses' Rooms	Guardians	E. Seward, Architect, Queen's Chambers, Cardiff.
" 10	Teignmouth—Alterations and Additions to Chapel	Trustees, Wesleyan Methodist Church.	T. Humbley, Bank Street, Teignmouth.
" 10	Leven, Fife—Two Cottages, Outbuildings, &c.	Admiralty	Superintending Engineer, H.M. Naval Establishment, Rosyth near Inverkeithing.
" 10	Plymouth—Sliding Partitions	—	E. C. Cook, 18 Princess Square, Plymouth.
" 11	Mitchell, Cornwall—Enlargement of Church	—	S. Hill, Architect, Green Lane, Redruth.
" 11	Stainland, Yorks—Eight Houses	—	C. F. L. Horsfall & Son, Architects, Lord St. Chambers, Stainland.
" 11	Aldershot—Schools	Urban District Council	F. C. Uren, Surveyor, Municipal Buildings, Aldershot.
" 11	Bargoed—Police Station	Joint Committee of the Glamorgan Quarter Sessions.	Council Offices, Westgate Street, Cardiff.
" 11	Bedale—Chapel	—	T. Hogg, Exelby, Bedale.
" 11	Drung, Donegal—Residence	Council	P. O'Donnell, N.T. Quigley's Point, Londonderry.
" 11	Southampton—Repairs, &c.	Education Committee	Hartley University College, Southampton.
" 11	Walthamstow—School	—	H. Prosser, Architect, Education Committee Offices, High Street, Walthamstow.
" 11	Manchester—Pulling down and Rebuilding Retort House	Corporation	C. Nickson, Superintendent, Gas Department, Town Hall, Manchester.
" 13	Drighlington, near Bradford—Police Station	County Council	J. Vickers Edwards, County Architect, Wakefield.
" 13	Darwen—Wall	Corporation	Borough Engineer, Municipal Offices, Darwen.
" 13	London, N.W.—Two Cottages	Hendon U.D.C.	S. S. Grimley, Engineer, Council Offices, Hendon.
" 13	Bridestowe—Rebuilding	Trustees of Hamley Estate	E. H. Harbottle & Son, Architects, County Chambers, Exeter.
" 13	Erith, Kent—Additions to Electric-Light Station	Urban District Council	W. Egerton, 12 Queen's Road, Erith, Kent.
" 13	Caterham, Croydon, &c.—Repairs and Materials	War Office	Royal Engineers' Office, 41 Charing Cross, London, S.W.
" 13	Southend-on-Sea—Additions to Schools	Corporation	W. H. Snow, Town Clerk, Southend-on-Sea.
" 14	London, S.W.—Balcony Dwellings	London County Council	Architect's Dept. (Housing Section), 19 Charing Cross Road, W.C.
" 14	Tredegar Mon.—Extensions to Workhouse	Guardians of Bedwellty Union	James & Moran, Architects, Charles Street Chambers, Cardiff.
" 14	Dartford—Reconstruction of Bridge	Kent County Council	F. W. Ruck, County Architect, Maidstone.
" 15	Winchester—Additions at Pumping Station	Town Council	City Surveyor, Guildhall, Winchester.
" 15	Pwllheli—Transept	—	Liannor Vicarage, Pwllheli.
" 15	Dudley—Extensions to Offices, &c.	Tramways Committee	R. P. Wilson, 46 Victoria Street, Westminster.
" 16	Amersham—School	Governors of Amersham Grammar School.	H. Belch, Architect, Chesham.
" 16	Aberdare—Schoolrooms	Trustees, English Wesleyan Ch. Committee, Workmen's Library	J. L. Smith & Davies, Architects, Aberdare.
" 17	Rhymney, Mon.—Library, &c.	Admiralty	J. L. Smith & Davies, Architects, Aberdare.
" 17	Speeton—Houses, &c.	—	Director of Works Department, Admiralty, 21 Northumberland Avenue, London, W.C.
" 17	South Devon—Houses, &c.	Admiralty	Superintending Civil Engineer, H.M. Dockyard, Devonport.
" 18	Stainland—Eight Houses	—	C. F. L. Horsfall & Son, Architects, Lord St. Chambers, Stainland.
" 18	Carlisle—Byre	Asylums Committee	G. A. Oliver, County Architect, Carlisle.
" 20	Rhydyllwyfar, Abergavenny—Bridge	Rural District Council	J. Gill, Surveyor, 4 Brecon Road, Rhydyllwyfar.
" 21	Brentford—Extensions to Market	Urban District Council	N. Parr, Engineer and Surveyor, Clifden House, Boston Road, Brentford.
" 21	Brentford—Convenience	Urban District Council	N. Parr, Engineer and Surveyor, Clifden House, Boston Road, Brentford.
" 22	Taunton—Free Library	Free Library Trustees	Municipal Offices, Taunton.
" 23	Wimbledon—Enlargement of Schools	Urban District Council	R. H. S. Butterworth, Council Offices, Wimbledon, S.W.
" 24	Galway—Extension of Pier, Breakwater, &c.	County Council	H. Williams, Offices of Public Works, Dublin.
" 24	Paull—Three Houses, &c.	Admiralty	Director of Works Department, Admiralty, 21 Northumberland Avenue, W.C.
ENGINEERING:			
June 9	Exeter—Tramways	Corporation	J. E. Waller, 29 Great George Street, Westminster.
" 10	Ryde, Isle of Wight—Reconstruction of Pier	Pier Committee	T. K. Saunders, Belgrave Chambers, Ventnor.
" 10	Uphall—Electric-Light Installation	Bathgate District Committee	A. Lindsay, Engineer, 11 Jamaica Street, Glasgow.
" 11	Portsmouth—Condensing Plant, &c.	Town Council	A. Hellard, Town Hall, Portsmouth.
" 13	Brockweir, Chepstow—Bridge	Bridge Committee	S. W. & A. L. Yockney, 53 Victoria Street, Westminster.
" 13	Edinburgh—Boilers	Gas Commissioners	W. R. Herring, Chief Engineer, New Street Works, Edinburgh.
" 13	Erith, Kent—Bridge	Urban District Council	C. H. Fry, Clerk, Erith.
" 13	Erith—Bridge	Urban District Council	Hawtayne & Ceden, 9 Queen Street Place, London, E.C.
" 14	East Peckham—Reconstruction of Three Bridges	County Council	K. W. Kuck, County Architect, Maidstone.
" 14	London, S.W.—Coal and Ash Conveyors	London County Council	Clerk to the Council, County Hall, Spring Gardens, S.W.
" 14	Southall—Decorating and Heating at Public Offices	Urban District Council	K. Brown, Engineer and Surveyor, Public Offices, Southall.
" 14	Grandbridges, East Peckham—Retaining Wall, &c.	Kent County Council	F. W. Kuck, County Architect, Maidstone.
" 14	Newton Abbot, Devon—Waterworks	Rural District Council	S. C. Chapman, Engineer, Torquay.
" 14	Warrington—Permanent Way	Corporation	Preece & Cardew, 8 Queen Anne's Gate, Westminster.
" 15	Nunington, Yorks—Bridge	Rural District Council	R. Jennings, Clerk, Kirkbymoorside, Yorks.
" 15	Winchester—Additions to Sewage-Pumping Station, &c.	Town Council	City Surveyor, Guildhall, Winchester.
" 15	Ashford, Kent—Steam Road Roller	Rural District Council	H. Hamilton, Clerk, 21 Bank Street, Ashford, Kent.
" 20	West Ham—Electric Wiring	Educational Committee	W. Jacques, Architect, 2 Fen Court, Fenchurch Street, E.C.
" 20	London, E.—Electric-Light Installation	Stepney Borough Council	M. W. Jameson, 15 Great Aile Street, Whitechapel, E.
" 20	Macclesfield—Wiring and Plant	Asylums Committee	Lacey, Sillar & Leigh, 2 Queen Anne's Gate, Westminster.
" 20	Kingswintor—Sewage Pumps, &c.	Rural District Council	W. L. Llan, Engineer, Stourbridge.
" 21	Southampton—Heating	Corporation	J. A. Crowther, Borough Engineer, Southampton.
" 21	Nottingham—Reservoirs	Water Committee	S. Moore, Water Offices, St. Peter's Square, Nottingham.
" 21	Dublin—Pier Extension, &c.	County Council	County Council Offices, Dublin.
" 24	London, S.E.—River Wall, &c.	Lambeth Borough Council	H. Edwards, 346 Kennington Road, S.E.
July 4	Johannesburg—Cables, &c.	Municipal Tramways & Electric Supply	Noracy & Dawbarn, 82 Victoria Street, S.W.
" 30	Shanghai, China—Electric Tramways	Municipal Council	J. Pook & Co., 63 Leadenhall Street, London, E.C.
August 1	Calcutta—Water-Meter Testing Apparatus	Corporation	Engineer to the Corporation, 2 Municipal Office Street, Calcutta.
" 15	Bangkok, Siam—Carriages, &c.	—	General Manager, Siamese Government Railways, Bangkok.
IRON AND STEEL:			
June 11	Cornsay—Stores	Cornsay Colliery	Ferens & Love, Market Place, Durham.
" 11	Oswestry—Railway Stores	Cambrian Railway	Stores Offices, Cambrian Works, Oswestry.
" 13	Aberaman, near Aberdare—Stores (Bars, Bolts, &c.)	Powell Duffryn Steam Coal Co.	Directors, Powell Duffryn Steam Coal Co., 201 Leadenhall Street, London, E.C.
" 14	Wrexham—110 Sheep Pens	Town Council	Borough Surveyor's Office, Willow Road, Wrexham.
" 15	London, E.C.—Deck Spans	East Indian Railway Co.	East Indian Railway Co., Nicholas Lane, London, E.C.
" 15	Amsterdam—Ironwork	H.M. Consul	Mart Nyhoft, Bookseller, The Hague, Holland.
" 24	Nottingham—Cast-Iron Valves, Hydrants, &c.	Corporation	S. Moore, St. Peter's, Church Side, Nottingham.
PAINTING AND PLUMBING:			
June 9	Genoa—Colours and Varnish	H.M. Consul-General	Technical Offices of the Navy, Genoa.
" 11	Hull—Painting	Educational Committee	Educational Offices, Albion Street, Hull.
" 11	Rhos—Painting	—	W. E. Jones, 54 Hall Street, Rhos.
" 14	Southall—Decorating	Urban District Council	R. Brown, Engineer and Surveyor, Public Offices, Southall.
" 16	Bristol—Oils and Colours	Guardians	J. G. Simpson, St. Peter's Hospital, Bristol.
" 18	Padfield, Glossop—Painting, &c.	—	W. Smiths, 37 Post Street, Padfield.
" 20	Thorne, near Doncaster	Rural District Council	J. Stanley, Surveyor, Thorne.
" 20	West Ham—Painting, &c.	Educational Committee	W. Jacques, Architect, 2 Fen Court, Fenchurch Street, E.C.
" 21	London, E.C.—Painting, &c.	Shoreditch Borough Council	J. R. Dixon, Borough Surveyor, Town Hall, Shoreditch.
" 23	Newport, Mon.—Painting	Guardians	Union Offices, Newport, Mon.
" 30	Wrexham—Cleaning, &c.	Educational Committee	T. Bury, Clerk, Guildhall, Wrexham.

Complete List of Contracts Open--continued.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
ROADS AND CARTAGE:			
June 9	Stockport—Making-up	Highways and Sewers Committee	J. Atkinson, Borough Surveyor, Stockport.
" 10	Halesworth—Granite	Urban District Council	C. H. White, Clerk to the Council, Halesworth.
" 11	Wakefield—Granite, &c.	Rural District Council	F. Massie, Tealey House, Wakefield.
" 11	Hastings—Cartage	Rural District Council	D. Paine, Stonelynk Farm, Fairlight, Hastings.
" 13	Wickham Market, Suffolk—Granite, &c.	Plomesgate R.D.C.	T. W. Read, Workhouse, Wickham Market, Suffolk.
" 13	Wimbledon—Dust Vans	Urban District Council	C. H. Cooper, Surveyor, Council Offices, Broadway, Wimbledon.
" 13	Winchester—Hire of Steam Roller	Southampton County Council	W. J. Taylor, County Surveyor, The Castle, Winchester.
" 14	Hertford Granite	Corporation	T. J. Sworder, Town Clerk, Hertford.
" 14	Bromley—Making-up	Council	Borough Engineer, Bromley.
" 15	Chiswick—Making-up	Urban District Council	J. Barclay, Surveyor, Town Hall, Chiswick.
" 15	London, S.W.—Making-up	Fulham Borough Council	F. Wood, Borough Surveyor, Town Hall, Fulham, S.W.
" 16	Totnes, Devon—Road	Rural District Council	A. Tucker, Highway Surveyor, Hazard, Totnes.
" 17	Preston, Lancs—Levelling, &c.	Corporation	Borough Surveyor, Town Hall, Preston, Lancs.
" 18	Buxton—Granite	Urban District Council	S. Taylor, Clerk to the Council, Buxton.
" 21	Dartford—Road Construction	Urban District Council	Surveyor's Office, Dartford.
" 22	Wanstead—Making-up	Urban District Council	Surveyor's Department, Council Offices, Wanstead, N.E.
" 24	Lavenshulme, Lancs—Street Works	Urban District Council	J. Jepson, Surveyor, Guardian Chambers, Tiviot Dale, Stockport.
SANITARY:			
June 9	Hurst, near Ashton-under-Lyne—Converting Closets	Urban District Council	Inspector of Nuisances, Council Offices, King Street, Hurst.
" 9	Blairgowrie—Sewer	Town Council	Borough Surveyor's Office, George Street, Blairgowrie.
" 11	Oswestry—Drain Pipes	Cambrian Railway Co.	Stores Office, Cambrian Works, Oswestry.
" 11	Clitheroe—Sewerage	Rural District Council	J. Eastham, Clerk, Clitheroe.
" 11	Lochmaben—Sewerage Works	Town Council	D. Balfour & Son, 3 St. Nicholas Buildings, Newcastle-on-Tyne.
" 13	Thames Ditton, Surrey—Main Drainage Works	Urban District Council	A. J. Henderson, Engineer, Council Offices, Portsmouth Road, Thames Ditton.
" 16	Bristol—Sanitary Pipes	Guardians	J. J. Simpson, St. Peter's Hospital, Bristol.
" 17	Valletta, Malta—Glazed Earthenware Pipes	Public Works Department	Crown Agents for the Colonies, Whitehall Gardens, London.
" 20	Hastings—Drainage Work	Education Committee	C. A. Pigott, Architect, Saxon Chambers, London Rd., St. Leonards.
" 20	Kingswinford—Sewerage Works	Rural District Council	W. Fiddian, Engineer, Old Bank Offices, Stourbridge.
" 20	Kingswinford—Sewer Pipes	Rural District Council	W. Fiddian, Engineer, Old Bank Offices, Stourbridge.
" 21	London, E.—Sewers	Engineer's Department	County Hall, Spring Gardens, S.W.
June 11	Cornsay—Timber	Cornsay Colliery	Ferens & Love, Market Place, Durham.
" 11	Ilford—Fencing	Urban District Council	H. Shaw, Surveyor, Public Offices, Ilford.
" 13	Aberaman, near Aberdare—Stores	Powell Duffryn Steam Coal Co.	Stores Manager, Aberaman, near Aberdare.
" 16	Bristol—Timber	Guardians	J. J. Simpson, St. Peter's Hospital, Bristol.

List of Competitions Open.

DATE OF DELIVERY.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	DEPOSIT REQUIRED FOR CONDITIONS &c.	FROM WHOM PARTICULARS MAY BE OBTAINED.
June 30	Peterborough—Library	£50, £25, £15.	£1	W. Mellows, Town Clerk, Peterborough.
July 2	Bury St. Edmunds—Alterations to Shire Hall	£50, £30, £20.	£1	A. A. Hunt, County Architect, Sudbury, Suffolk.
" 30	Aberystwyth—Public Library	£50, £15.	£1 is.	A. J. Hughes, Town Clerk, Aberystwyth.
" 31	Grantham—Church			Rev. H. H. Surgey, Wyville House, Dudley Road, Grantham.

Tenders.

Information from accredited sources should be sent to "The Editor" at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Addressed postcards on which lists of tenders may be stated will be sent post free on application to the Manager, BUILDERS' JOURNAL, 6, Great New Street, Fetter Lane, E.C.

Balrath (Ireland).—For the erection of a wing and sundry alterations to the residence and stables at the Grove, Balrath, co. Meath, for Mr. F. Douglas Osborne, Mr. Frederick Shaw, M.R.I.A., architect, 36, South Frederick Street, Dublin, and Drogheda:—

Smith Brothers, Kells £2,100
H. Henby, Drogheda 1,820
R. McDonnell, * Bul Ring, Drogheda .. 1,790

* Accepted.

Barnard Castle.—For the erection of steam laundry, boiler-house, chimney, and setting Cornish boiler. Mr. F. Farrow, architect, 7, Market Place, Barnard Castle. Quantities by architect:—

C. Martin, * 3, Longfield Terrace, York.
J. Kyle & Sons, Barnard Castle.
R. Wilson, Barnard Castle.

* Accepted.

Devonport.—For pulling down and rebuilding the "White Lion" public-house, King Street and Cannon Street, for Mr. W. Ford. Mr. Edgar M. Leest, architect, 14, St. Aubyn Street, Devonport. Quantities by Messrs. Leest & Adams, Devonport:—

Axworthy £1,549 10 7
G. H. Smith & Son 1,498 15 0
Blake & Son 1,390 0 0
J. H. Palmer 1,355 0 0
F. Watts 1,349 10 0
Partridge 1,349 0 0
Stanbury 1,340 0 0
T. Jenkin & Son 1,333 0 0
T. May 1,318 0 0
Pearce Brothers, * Plymouth 1,299 0 0

* Accepted.

Haslemere.—For the erection of fire-engine station, for the Haslemere Parish Council. Mr. John H. Howard, architect, Haslemere:—

W. Harding, Shottermill £645 0 0
Mitchell Brothers, Shalford 504 0 0
D. Fry, Godalming 480 0 0
W. Rollason, Hindhead 478 10 0
Walter Harding, Shottermill 467 10 0
Haslemere Builders, * Haslemere 466 16 0
T. Luff, Shottermill 433 0 0
J. F. Harding, Shottermill 425 0 0

* Accepted.

Lincoln.—For the erection of a public elementary school on Monk's Road, Lincoln, for the City of Lincoln Education Authority. Messrs. W. Watkins & Son, architects, Silver Street, Lincoln:—

F. Messom, Bangor Street, Nottingham .. £7,050
S. & R. Horton, Portland Street, Lincoln .. 6,961
T. Cuthbert, Hyson Green, Nottingham .. 6,700
Mawer Brothers, Louth 6,632
H. S. & W. Close, Brayford Side, Lincoln .. 6,555
W. Wright & Son, * Park Street, Lincoln .. 6,200

* Accepted.

Pengam (Wales).—For the erection of thirty or more houses near the Rhymney railway station at Pengam, for the Glan-y-nant Building Club. Mr. P.

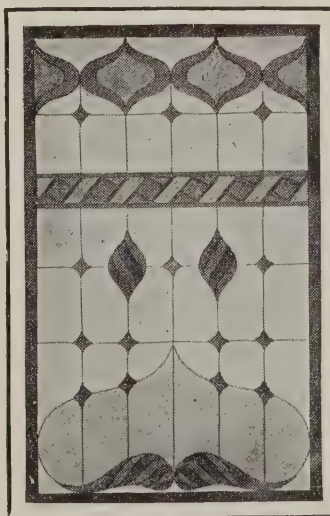
Vivian Jones, P.A.S.I., architect and surveyor, Hen-good:—

E. Edwards, Gilfach, Bargoed £5,598 15 0
Lewis & Evans, Barry 5,580 0 0
Gibbon, 63, Tudor Road 5,560 0 0
Vodden & Lee, Gilfach, Bargoed .. 5,475 0 0
Edwards & Hopkins, Gilfach Farm, Bargoed 5,400 0 0
Paul & Sons, Bargoed 5,280 0 0
Mathews, Fleur-de-lis, Pengam .. 5,250 0 0
L. Davies, Abercynon 5,190 0 0
E. Hughes, * Bargoed 5,145 0 0

* Accepted.

(Continued on p. xviii.)

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ARCHITECT'S JUNIOR ASSISTANT, 21, desires engagement; 4 years' experience, accurate draughtsman; Elementary and Advanced Construction certificates, South Kensington; moderate salary.—ASSISTANT, 34, Wingate Road, Hammersmith, W. 431

BRICKLAYER, good, well up in fire work, range-setting or outside work, wants permanency. Good references.—E. WILLIAMS, 2, Kempson Road, Fulham, S.W. 421

BUILDER'S CLERK; thorough knowledge d.e. bookkeeping, timesheets and general routine. Good draughtsman. Town or country. Moderate salary.—E. H., 11, Archibald Road, Tufnell Park, N. 427

BUILDER'S SON (age 19), owing to father's death, seeks **SITUATION as CLERK**. Managed his father's office four years. Distance no object. Out of London preferred.—Apply, CHARLES WING, Birchington, Kent. 430

BUILDER'S SON seeks permanent sit., (age 23), as Builder's Assistant; time taking &c.; fill up spare time bench and fixing; moderate salary.—Apply Box No. 436, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

CARPENTER and JOINER, age 22, eight years' experience, desires **CONSTANCY**, country preferred.—H. G. C., 20, Woodhouse Grove, East Ham. 401

CARPENTER and JOINER (29), seeks **PERMANENCY**. Steady, capable and willing. Good all-round hand. Bench, fixing, or jobbing. Used to London and country work.—G. E. H., 23, Heigham Road, East Ham. 443

CARPENTER and JOINER, improver, seeks employment in good firm, town or country; low rate.—J. B., 86, North Street, Edgware Road, W. 420

CLERK OF WORKS desires an appointment. Age 36. Total abstainer. Able to prepare details, plans, specifications, quantities, surveys, levels, highest references.—Apply Box 395, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

DRAUGHTSMAN is desirous of assisting others in the PREPARATION OF DRAWINGS, &c., at his own address.—J., 44, Thornton Road, Thornton Heath. 407

ENGINEER - SURVEYOR, Advertiser (French) seeks appointment as above. Good Home and Foreign experience in Mechanical and Constructional work, able to prepare details, plans, surveys, levels, &c. (Home or Abroad).—Apply, J. G., 17, Cathcart Hill, Highgate. 438

FOREMAN PAINTER AND PAPERHANGER seeks **RE-ENGAGEMENT**, or would take Piece Work or Establishment Work. Good knowledge of Jobbing Work in all branches.—E. T., 117, Goodrich Road, East Dulwich. 412

FULLY QUALIFIED CLERK OF WORKS open for **ENGAGEMENT**. Thorough knowledge of every branch of Building Trade, Drainage, Sanitation, Plans, Details, Materials. Used to large works. Good testimonials and references.—Box 408, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

GENERAL FOREMAN seeks **ENGAGEMENT**. New or alteration works. Practical and energetic. Good manager, Carpenter and joiner. Abstainer. Long references.—ELLISON, Homestead, Cromwell Road, Hounslow, Middlesex. 414

GENERAL FOREMAN seeks engagement; just finished; 11 years' good reference last employer, done good work and large jobs. Carpenter, 32 (abstainer).—G. E., 86, Park Road, Baker St., N.W. 429

GENERAL FOREMAN wants re-engagement, new or alteration, good Draughtsman and Manager of men, by trade Carpenter and Joiner, age 40.—Box 397, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

GILDER, Practical Worker and Estimator seeks **RE-ENGAGEMENT as FOREMAN**; 16 years' reference.—J. L., 291, New North Road, Islington, N. 399

MACHINIST wants **SITUATION**. Spindle, French or Block. Can make Cutters. All round hand. Can take charge. Town or country. Good references.—A. FOUNTAIN, 26, Carlton Gardens, Herne Bay, Kent. 434

PAPERHANGER (first-class), just disengaged after five years' job, requires **WORK**. Piece preferred, but willing to fill up time.—A. G. F., 2, Liebert Villas, Westcombe Hill, Blackheath, S.E. 428

PLUMBER, GAS and HOT-WATER FITTER, also zinc work; suit builder or jobbing shop. London and country experience.—E. G., 76, Wharton Road, Shepherd's Bush, W. 432

PLUMBING, piece work, **WANTED**, lead laying or sanitary work. Labour and solder only.—W. S., Greek Street, Soho, W. 440

QUANTITY SURVEYOR'S ASSISTANT, 3½ years' experience, abstracting and billing, salary 25s.—T. A. S., 36, Bickersteth Road, Tooting Junction, S.W. 402

QUANTITY SURVEYOR, fully qualified, open to prepare Estimates and adjust Variation Accounts at own office. Full responsibility. Good references. Low charges.—Box 400, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

SENIOR ASSISTANT (30), now **DISENGAGED**, able Designer of considerable experience in competition and general work. Would take charge. Salary, £3 10s. Excellent references.—H. E. DANE, 49, St. Stephen's Avenue, Shepherd's Bush. 442

SHOP FOREMAN of Joiners and Machines, 15 years with last employer, good references and reason given for being out.—A. G. COOPER, Rose Cottage, St. John's Road, Ipswich. 435

WORKING FOREMAN of CARPENTERS and JOINERS, thoroughly practical in all kinds of household repairs and alterations. Abstainer, good timekeeper. Country preferred.—A., 90, Replingham Road, Southfields, S.W. 422

YARD FOREMAN and TIMEKEEPER seeks re-engagement in Contractor's or Builder's yard, used to all building materials and plant; distance no object.—ABSTAINER, 60A, Dalston Lane, N.E. 441

Appointments Vacant.

GOOD FIGURE GLASS PAINTER **WANTED**.—Apply, stating age, wages, and experience, EMPLOYERS' ASSOCIATION, Victoria Street, Toronto, Canada.

MR. JOHN CHADWICK, F.G.S., Consulting Engineer (Water Supply Sewerage and Sewage Disposal), has **VACANCY** for Articled Pupil.—Apply, Richmond House, Bletchley, Bucks, or St. Margaret's Mansions, 53, Victoria Street, Westminster.

NORTHAMPTON INSTITUTE, St. John Street Road, London, E.C.—The Governing Body invite applications for the appointment of **DRAWING OFFICE ASSISTANT** (Building Trades) one evening per week, for the Session 1904-5. Further particulars and forms of application, which should be returned not later than Saturday, June 11th, 1904, can be obtained on application by letter to R. MULLINEUX WALMSLEY, Principal.

ROOF-SLATE QUARRY (Foreign) wants **AGENT**. Can supply green, blue, and purple Slates of best quality at competitive prices.—Address R. S., 347, Deacon's Advertising Offices, Leadenhall Street, E.C.

Drawings, Tracings &c.

CITY OF LONDON AND FINSBURY DRAWING AND TRACING OFFICES. Experienced assistance of every kind promptly given. Architectural Designs, Perspectives, Competitions. Specifications, Quantities, Photographs, Lithography. No. 113, Finsbury Pavement (Moorgate), London, E.C. Telegraph, "PITCHPINE, LONDON." Phone, 1099 Central

Miscellaneous.

LIFTS.—WM. AUG'S GIBSON, LTD., formerly President of American Elevator Co., later Managing Director Otis Elevator Co., Ltd. Temple Bar House, 28, Fleet Street, London, E.C.

ACCOUNTANTS and BOOKKEEPERS to **BUILDERS and CONTRACTORS**.—Trading, and Profit and Loss Accounts, Balance Sheets, Prime Cost Accounts, Books opened, investigated, and written up.—Write to MILNE & Co., 46, Milman Road, Queen's Park, W.

ARCHITECT, with London Offices, requires **PARTNERSHIP** in an Established Practice near London or Seaside Town.—Box 439, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

"**BUILDERS' JOURNAL**," Nos. 301 to 455, "Building World," Nos. 230 to 420. Landseer's Works in 12 parts, comprising 44 steel engravings and about 200 woodcuts. Any reasonable offer.—R. K. RONCHETTI, Mandale Road, Thornaby-on-Tees.

CLINKER FOR SALE, washed and graded for Bacteria Beds; any quantity; about 1s. 8d. per cubic yard. Large stocks on hand. Also slag and concrete goods.—Apply WAKE & HOLLIS, LTD., Collingwood Buildings, Newcastle-on-Tyne.

GLAZED—BLUE STAFFORDSHIRE—FLETTON BRICKS. London Agency wanted by Advertiser having good connection and long experience; represented late firm over 15 years.—Box 418, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

MARBLE, GRANITE, STONEWORK. Supplied to Architects and Builders. Send for Builders' Price List and Quotations. Telephone 1159, Hampstead.—KELLY & Co., Kilburn, Mill Hill, N.W., etc.

PARTNER WANTED.—Architect, Surveyor, and Estate Agency Business. Splendid opening. Seaside resort. Suit young architect with moderate capital. Could live with advertiser.—Box 409, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

THE FOLLOWING BOOKS (new), carriage paid.—"Gwillt's Encyclopædia," 12/6; "Practical Rules for Drawing," G. G. Pyne, 3/- (pub. 7/6); "Some Hints on Learning to Draw," 3/6 (pub. 8/-); "Modern Architecture" (35 plates), 10/-.—Box 387, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

430 CEMENT BAGS FOR SALE in excellent condition. 3d. each, or £5 to clear the lot. Sample posted for six stamps.—ARTHUR MAY, Heybridge, Essex.

WIRE NAILS, Mixed, 8s. per cwt.; 28 lbs., 2s. 3d.; Screws, mixed, 28s. per cwt.; 28 lbs., 7s. 6d.; wire, cut, wrought and malleable nails, tacks, shoe nails, rivets, &c., wholesale prices.—MIDLAND NAIL WORKS, 26 and 28, Rea Street, Birmingham. (John Pyne, Proprietor.)

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Telephone, No. 1011 HOLBORN. Manager—JOHN B. THORP. Telegrams: "DIVIDITORE," LONDON.

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ALL TECHNICAL EXAMINATIONS.—First place in every open competition during last two years. Correspondence or Resident Tuition. Vacancy for Articled Pupil.—G. A. T. MIDDLETON, 19, Craven Street, W.C.

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R.I.B.A. EXAMS.—Personal and Correspondence tuition; courses of any duration. Apply for syllabus to Mr. A. G. BOND, B.A. Oxon., A.R.I.B.A., 115, Gower Street, London, W.C. (late Howgate and Bond).

STRUCTURAL STEELWORK

Correspondence Classes specially for Architects, Assistants, Surveyors, Builders, and Draughtsmen, are held by the Midland Engineering Bureau, Strand, Derby. Specialists in American and Continental Construction. Thorough Tuition. Send for descriptive booklet J. (1904), and read opinions of past students.

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FOUNDED 1884. INCORPORATED 1893.

Telegrams: "Crypt," London. Telephone: 1852, Holborn. STABLE INN BUILDINGS, HOLBORN, W.C.

The next qualifying Examination for membership will be held in OCTOBER, 1904.

C. McARTHUR BUTLER, Secretary.

TO SURVEYORS AND ARCHITECTS' ASSISTANTS. **LAND SURVEYING AND LEVELLING CLASS.** including Theodolite work, will commence early in June. Ten practical Field Lessons, Ten Lectures, and Home-work. Inclusive fees, £2 2s.—Apply at once for Prospectus to J. LAWRENCE, jun., 112, Shirland Rd., W.

THE ARCHITECTURAL ASSOCIATION.

June 11th. Second Summer Visit, to Colchester. The new Town Hall will be visited, and Mr. John Belcher, A.R.A., will, if possible, conduct the party over the building. St. Botolph's Priory, St. John's Abbey Gateway, and Colchester Castle will also be visited. The party will afterwards be entertained to tea by the Rt. Hon. James Round, M.P. It is suggested that members should lunch before leaving town.

Meet at Liverpool Street main line booking office at 1.10 p.m. for the 1.30 p.m. train for Colchester. P.O. for 6s. 6d. to be sent to the Secretary, 18, Tufton Street, Westminster, S.W., on or before June 9th. The party will return by the 8.14 p.m. train, arriving at Liverpool Street at 9.25 p.m.

LOUIS AMBLER } Hon. Secs.
HENRY TANNER, Jr. }

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THE NEXT EXAMINATION IN PRACTICAL SANITARY SCIENCE FOR

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Gentlemen already established in practice in any of the various branches of the Sanitary Profession are admitted to membership under certain conditions without examination.

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A course of Lectures will be given during the Winter Session on Sanitary Science.

Further particulars of the Secretary—

ARTHUR E. ASHBY,

19, BLOOMSBURY SQUARE, LONDON, W.C.

Contracts Open.



WAR DEPARTMENT CONTRACT.

NOTICE TO BUILDERS.

TENDERS are required for the External and Internal Painting, &c., of Military Hospital, Colchester, in the Eastern District.

Persons desiring to Tender for the execution of these works, must leave their names at the Royal Engineer Office, Colchester, on or before the 15th day of JUNE, 1904, and pay the sum of 10s. for the Bills of Quantities which, with Form of Tender, will be issued to each candidate.

The Secretary of State for War does not bind himself to accept the lowest or any Tender.

W. A. ST. CLAIR,
Colonel,

Royal Engineer Office, Commanding Royal Engineer,
Colchester, 1st June, 1904. Eastern District.

RUGBY URBAN DISTRICT COUNCIL.

IRONFOUNDERS.

CAST IRON WATER MAINS.

THE URBAN DISTRICT COUNCIL OF RUGBY invite TENDERS for the supply of about 950 yards of 5-inch, 800 yards of 4-inch, 1,200 yards of 3-inch CAST IRON WATER MAINS, together with Special Castings, Bends, etc.

Specification with Form of Tender may be obtained on application at the office of the undersigned on payment of One Pound, which will be returned on receipt of a bona fide Tender. Tenders endorsed "Cast Iron Water Mains" to be sent to Mr. T. M. WRATISLAW, Clerk to the Council, High Street, Rugby, on or before the 16th inst.

The Council do not bind themselves to accept the lowest or any Tender.

By order,
D. G. MACDONALD, Assoc. M. Inst. C.E.,
Surveyor and Waterworks Engineer.

Rugby, June 2nd, 1904.

BOROUGH of KINGSTON - UPON - THAMES.

ERECTION, &c., OF WALL.

The Corporation invite TENDERS for the TAKING-DOWN and RE-BUILDING of the ROYAL CAMBRIDGE ASYLUM WALL, Cambridge Road, in this Borough, in accordance with the Plan and Specification to be seen at the Borough Surveyor's Office.

Sealed Tenders, endorsed "Re-building of Wall," to be sent to me not later than WEDNESDAY, the 8th JUNE next.

The lowest or any Tender will not necessarily be accepted.

By Order,
HAROLD A. WINNER, Town Clerk.

Town Clerk's Office, Kingston-upon-Thames,
27th May, 1904.

EMPLOYMENT REGISTER.

Too late for Classification.

- 427.—BUILDER'S ASSISTANT, good draughtsman, book-keeping, timesheets, &c., town or country, mod. s.
- 428.—PAPERHANGER, piece work, or would fill up time, first-class man.
- 429.—GENERAL FOREMAN, age 32, 11 yrs. good refs., experience of good work and large jobs, carpenter, abstainer.
- 430.—BUILDER'S ASSISTANT, age 19, managed office 4 yrs., country preferred.
- 431.—ARCHITECT'S JUNIOR ASSISTANT, age 21, 4 yrs. ex., draughtsman, construction certificates, S.K., mod. s.
- 432.—PLUMBER, gas and hot water fitter, zinc work, London and country ex., suit builder or jobbing shop.
- 433.—ARCHITECT, 17½ yrs. ex., first-class draughtsman, practical.
- 434.—MACHINIST, spindle, French or block, all-round man, good refs., town or country.
- 435.—SHOP FOREMAN of JOINERS, 15 yrs. in last job, good refs.
- 436.—BUILDER'S ASSISTANT, age 23, timetaking, also bench and fixing, mod. s.
- 437.—ARCHITECT and QUANTITY SURVEYOR'S ASSISTANT, age 24, 8 yrs. good ex., surveys, levelling, ex. refs., energetic.
- 438.—ENGINEER, SURVEYOR. Home and foreign ex. in mechanical and constructional work. Plans, details, surveys, levels, &c.
- 440.—PLUMBING, SANITARY WORK, labour and solder only wanted.
- 441.—FOREMAN (yard) or Timekeeper for Builder's or Contractor's yard, ex. with building materials and plant, abstainer.
- 442.—SENIOR ASSISTANT, ex. designer, competition work, or would take charge, s. £3 10s. ex. refs.
- 443.—CARPENTER and JOINER, age 29, good all-round man, bench, fixing, jobbing, &c.

See p. xxii for the Employment Register.

Property & Land Sales.

STAMFORD HILL.—Valuable Freehold Building Estate, with nearly 700 feet frontage to the main road, pleasantly situate on high ground, near Clapton Common, close to tramway, near the Stamford Hill and South Tottenham Stations, and within 4½ miles of the Bank of England, ripe for immediate building operations and the creation of ground rents. The estate comprises an area of 9a. 2r. 25p. situate without the London County Council area, and includes, in addition to the fine old residence, known as "The Newsams" (in hand), with gate-keeper's lodge and stabling, four houses let on short tenancies at rents amounting in all to about £200 per annum. Vacant possession of the greater portion of the property can be given on completion of the purchase, thus enabling a purchaser at once to proceed with the development of the estate.

MESSRS. BEADEL, WOOD & Co. are instructed to SELL by AUCTION, at the Mart, Tokenhouse Yard, London, E.C., on Thursday, 16th June, 1904, at 1 o'clock precisely, the above valuable FREEHOLD BUILDING ESTATE, unless previously disposed of by private treaty. Particulars, with Plan and Conditions of Sale, may be obtained of Messrs. Broughton, Nocton, and Broughton, Solicitors, 12, Great Marlborough Street, W., at the Mart; and of Messrs. Beadel, Wood & Co., 97, Gresham Street, London, E.C.

At a very low reserve.

BOURNEMOUTH (Canford Cliffe).—Valuable FREEHOLD BUILDING LAND, having an area of 4 a. 0 r. 8 p., with the following frontages: 905 ft. to Canford Cliffs Road, 880 ft. to De Mauley Road and 190 ft. to Spencer Road. Adjoining Redmoor. Close to the sea. Four-fifths may remain on mortgage, payable by instalments.

MESSRS. HARMAN BROS. (in conjunction with Messrs. REBBECK BROS.), will SELL the above by AUCTION, at the MART, London, E.C., on FRIDAY, JUNE 10th, at TWO o'clock precisely, in one lot.

Particulars and conditions of sale, with plan, may be had of Messrs. WARD, BOWIE, & Co., Solicitors, 7, King Street, E.C.; of Messrs. REBBECK BROS., Auctioneers, The Square, Bournemouth; and of Messrs. HARMAN BROS., 25, Ironmonger Lane, London, E.C.

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OFFICE: 6, GREAT NEW STREET, FETTER LANE, E.C.

TENDERS—cont. from p. xv.

Pontnewydd (Wales).—For the erection of twenty houses at Richmond Road, Pontnewydd, for the Pontnewydd Building Club (No. 1):—
J. Charles, Newport... .. £5,000
J. A. Saxon, Abersychan... .. 4,693
Poulton & Whiting,* Pontnewydd... .. 4,000
* Accepted.

Sittingbourne.—For the erection of business premises in Station Street, Sittingbourne, and drainage works, for the Sittingbourne Co-operative Society, Ltd. Mr. Ernest C. Pearcey, architect, 2, Crescent Street, Sittingbourne:—
Elmore & Sons, Maidstone... .. £1,038 0 0
T. Monk... .. 975 0 0
L. Seager... .. 956 0 0
H. Gardler... .. 911 0 0
E. Bishop... .. 893 15 0
R. High... .. 898 10 0
G. Bowes... .. 863 0 0
H. J. Tidy*... .. 815 10 0
* Accepted. [Rest of Sittingbourne.]

Southall (Middlesex).—For the erection of the Carnegie free library, for the Southall-Norwood Urban District Council. Mr. Reginald Brown, A.M.I.C.E., &c., architect, Public Offices, Southall:—
General Builders' Association, Ltd.,
Notting Hill, W... .. £5,949 0 0
W. Wallis, Balham... .. 5,279 18 6
Brightman, Watford... .. 5,217 0 0
T. Bendon, Hammersmith... .. 5,145 0 0
W. Mash, Dursley... .. 5,109 2 6
E. Moss, Southend-on-Sea... .. 5,000 0 0
Kearley, Uxbridge... .. 5,000 0 0
E. Chamberlain, Addlestone... .. 4,995 0 0
J. Dorey, Ltd., Brentford... .. 4,988 0 0
J. Renshaw, Putney, S.W... .. 4,975 0 0
Ford & Walton, Kilburn, S.W... .. 4,935 0 0
Whitehead, Clapham Road, S.W... .. 4,875 0 0
Wisdom Brothers, Isleworth... .. 4,862 0 0
M. Coles, Plymouth... .. 4,828 0 0
Drake & Son, Hampstead... .. 4,769 0 0
A. & B. Hanson, Southall... .. 4,719 0 0
Galbraith Brothers, Camberwell
Green... .. 4,746 0 0
J. Dickens, Ealing... .. 4,690 0 0
G. Gibson, High Wycombe... .. 4,672 0 0
R. Gurr & Sons, Chiswick... .. 4,600 0 0
Ferguson & Co.,* Tottenham... .. 4,492 0 0
* Accepted subject to agreed deductions.

Taunton.—For the erection of school buildings and offices in Staplegrave Road, Taunton, for the Governors of Bishop Fox's Girls' School. Messrs. Samson & Cottam, 1, Hammet Street, Taunton, and Bridgwater, architects:—
H. W. Pollard, Bridgwater... .. £4,111 0 0
Gleed Brothers, Bridgwater... .. 3,699 0 0
G. H. Pollard... .. 3,650 0 0
F. W. Rowsell... .. 3,302 0 0
H. I. Spiller... .. 3,140 0 0
T. Moggridge... .. 2,942 15 0
Manning & Son... .. 2,920 0 0
C. B. Bryer, jun., Bridgwater... .. 2,870 0 0
A. J. Spiller*... .. 2,768 10 0
* Accepted. [Rest of Taunton.]

Dunstanburgh Castle, Northumberland, is to be sold by auction. It was first a British stronghold, then a Roman fortress, and at a much later period was garrisoned for Queen Margaret after the battle of Hexham.

Coming Events.

Wednesday, June 8.
GEOLOGICAL SOCIETY.—Meeting at 8 p.m.
Thursday, June 9.
SOCIETY OF ANTIQUARIES.—Meeting at 8.30 p.m.
INSTITUTION OF ELECTRICAL ENGINEERS.—Annual General Meeting at 5 p.m.
Friday, June 10.
SOCIETY FOR THE PROTECTION OF ANCIENT BUILDINGS.—Mr. Holman Hunt on the work undertaken by the Society, at the Society of Antiquaries, Burlington House, at 3 p.m.
SOCIETY FOR THE ENCOURAGEMENT OF THE FINE ARTS.—Annual Banquet at the Trocadero at 7 p.m.
Saturday, June 11.
ARCHITECTURAL ASSOCIATION.—Second summer visit to Colchester Town Hall (leave Liverpool Street 1.30 p.m.).
NORTH OF ENGLAND INSTITUTE OF MINING AND MECHANICAL ENGINEERS.—Mr. R. R. Simpson on "Well-sinking in the Punjab," at 2 p.m.
ST. PAUL'S ECCLESIOLOGICAL SOCIETY.—Visit to the Church of St. Mary-le-Bow at 2.30 p.m. and to St. Mary Aldermary at 3.15, and St. Vildred, Bread Street, under the guidance of Mr. P. Norman, F.S.A.
EDINBURGH ARCHITECTURAL ASSOCIATION.—Visit to Castle Campbell.
Monday, June 13.
INSTITUTE OF SANITARY ENGINEERS.—Meetings of Organizing Committee at 3 p.m. and Examination and Literary Committee at 5 p.m.
Wednesday, June 15.
INSTITUTE OF SANITARY ENGINEERS.—Meetings of Election Committee at 3 p.m., General Purposes and Finance Committee at 5 p.m., and Half-yearly General Meeting at 7 p.m.
INSTITUTION OF CIVIL ENGINEERS.—Conversation at 9 p.m.
Thursday, June 16.
SURVEYORS' INSTITUTION.—Conversation at the Natural History Museum, South Kensington, from 9 to 12 p.m.
Saturday, June 18.
SOCIETY OF ARCHITECTS.—Field Day at Coventry. Party to meet at Euston Station at 9 a.m. prompt.

W. PRITCHARD, carpenter and builder, Lye, Worcester. R.O. May 20th.
LEEDS ART POTTERY AND TILE CO. (R. HAUPTMANN)* R.O. May 19th.
MOORE AND SONS, surveyors, estate agents, builders and decorators, East Molesey, Surrey. R.O. May 17th.
FERRY BRICK CO., Higham Ferrers, Northants. Adj. May 20th.
H. CULLIFORD, road contractor, Ash, Somerset. R.O. May 28th.
BENTLEY BRICK AND QUARRY CO. (THOMAS MARTIN & SONS), Bentley, near Walsall. R.O. May 19th.
R. W. BYOTT, builder, Hoddesdon, Herts. R.O. May 24th.
J. BUTTERWORTH, builder, Dearnley. P.E., Lecture Hall, Rochdale, June 24th, at 11.30.
DE LACY BROTHERS, electrical engineers, Liverpool. First meeting, O.R.'s, Liverpool, June 8th, at 12. P.E. Liverpool C.C., June 16th, at 11.
H. R. ELLIS, architect, Great Grimsby. First meeting, O.R.'s, Grimsby, June 8th, at 11. P.E., Grimsby Town Hall, July 7th, at 11.
J. WILLIAMS, builder, Newport, Mon. First meeting, O.R.'s, Newport, June 8th, at 11. P.E., Newport Town Hall, June 9th, at 11.
J. RUSSELL, joiner and builder, Skipton. R.O. May 27th. First meeting, O.R.'s, Bradford, June 10th, at 3. P.E., Bradford C.C., June 22nd, at 10.
F. WIGLEY, builder, West Dulwich. R.O. May 26th. First meeting, London Bankruptcy Court, June 9th, at 11 P.E., same, July 5th, at 11.30.
W. J. CRONKS, builder, Croydon. First meeting, 24, Railway Approach, London Bridge, June 5th, at 12.30, P.E., Croydon C.C., July 13th, at 11.

New Companies.

PERFECTION PAINT SYNDICATE, LTD. Capital: £3,000 in £1 shares.
GEORGE K. HARRISON, LTD., firebrick makers, &c., Lye, near Stourbridge. Capital: £70,000 in £1 shares
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G. W. DAVIES, LTD., sawmill proprietors, joiners, &c., Deptford. Capital: £2,000 in £1 shares.
J. WATSON JUNR., & Co., LTD., timber merchants, 36, Crown Street, Manchester. Capital: £2,000 in £1 shares.
JAMES BROWN (LONDON), LTD., brick, tile, terra, pipe, &c., makers, Essex Wharf, Durward Street, Whitechapel. Capital: £5,000 in £1 shares.
G. & W. HALLIDAY, LTD., manufacturers of bricks, tiles, &c., Howcans, Halifax. Capital: £10,000 in £1 shares.
FIRE-RESISTING CORPORATION, LTD., Townmead Road, Fulham. (To acquire the business of the Non-Flammable Wood and Fabrics Co., Ltd.) Capital: £97,500 in £1 shares.

Bankruptcies.

[Abbreviations: R.O.—receiving order; P.E.—public examination; C.C.—county court; O.R.—official receiver; Adj.—Adjudication.]
DURING THE WEEK ending June 3rd fifteen failures in the building and timber trades in England and Wales were gazetted.
J. GREEN, builder, Darlington. R.O. May 20th.
A. J. PHILPOTT, builder, Salisbury. Adj. May 20th.
T. O. BROWN, builder and contractor, Ferndale, Glam. Gross liabilities £1,186; assets £1,595.
J. FRAMPTON, builder, East Dulwich. Liabilities between £4,000 and £5,000.
R. DUNN, builder, Shildon. Gross liabilities £3,136, £2,543 expected to rank; assets £705; deficiency £1,838.
J. A. ODY, builder, Kidderminster. Gross liabilities £6,490; estimated to rank £2,027; assets £1,271.

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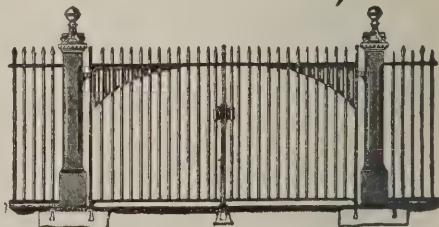
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(See displayed Advt. in issue for May 18, p. vii.)

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Electrical Notes.

A Compact House-lighting Plant.

The high-speed motor-car engine has been brought to such a state of perfection that it is perhaps surprising that its applications in other directions have not been more largely utilized. An engine requiring small space should have many uses, and particularly as the high speed enables a comparatively large power to be obtained. A very neat and simple electric-lighting set has been put on the market by the Siemens-Schuckert Co., and it is to be hoped that English makers will also show that they can compete in a line that should be in large demand, especially for small country houses. The set consists of an engine driven by benzine or alcohol, of $4\frac{1}{2}$ -h.p., direct-coupled on one bed-plate to a special dynamo—the whole combination running at a speed of 1,200 revolutions per minute. The bed-plate is mounted on spiral springs so as to reduce vibration. The set further includes a battery of accumulators capable of discharging 220 ampères for three hours, or a smaller current for a longer period, and a marble switch-board on which is mounted the usual apparatus as well as an induction coil for the engine: the latter is cooled by means of a water jacket, which is either in direct connection with the mains or with a raised water-tank. The reservoir for the alcohol or benzine is fixed outside the room and is completely enclosed. It is fed by a small pump. Lubrication of the engine is entirely automatic. The whole arrangement can be kept in order by anyone not having technical knowledge, and the price is very moderate.

A new Candle Lamp.

So-called candle lamps, or imitation wax candles for electric light, have been used for many years and have generally been considered as much a trouble as they are an

ornament. They consist primarily of a porcelain tube and a flame-like lamp at the top. The tube rests on the candle sconce, and the wires are conducted through a small brass tube inside to a miniature lampholder at the top. The trouble has been generally due to the vibration of the porcelain tubes, and various devices, consisting of metal springs and rubber rings, or both, have been used to obviate this. The result has never been very satisfactory, and in addition the porcelain tubes are liable to break. A new type of candle lamp, patented by a Mr. Hunter, and made by the Sir Hiram Maxim Electrical and Engineering Co., has now been introduced. It is called the "Huntalite" lamp, and consists of an opal tube ending in a clear glass plane-shaped apex. In fact, the whole candle is in one lamp, which has the usual miniature bayonet cap at one end and the filaments at the other. The lamp-holder is, of course, fixed in the sconce of the fitting. The result is very simple and effective. Not only does the top assume an appearance very much like a candle flame, but the opal tube, being quite empty, becomes translucent like a wax candle. It is claimed that new filaments can be fixed readily; and although the cost of the complete lamp is greater than the present flame lamps, yet when the fact is considered that the usual fitting, as described before, is dispensed with, the total cost comes out at less than the arrangement which has served up to the present.

Conduits for Wiring.

For some weeks an energetic and somewhat personal correspondence has been carried on in a contemporary regarding the question as to the best form of conduits to use for house wiring. It has been contended by one that the conduit should be of heavy gauge, and by another that it should be provided with an insulating lining, whilst a third has submitted that it can be of light gauge so long as it is screwed or other means

are adopted to ensure electrical continuity. Most of those writing had their own particular manufactures to advertise, and others put forward their special fads, largely based on theory. The fact is established, however, that condensation takes place in all conduits, and that therefore the only qualities required are electrical continuity, and, where necessary, strength in addition. The latter virtue applies to conduits in use in places where explosive gases, fumes and rough-usage are likely to be found. For all ordinary purposes the lighter gauge tubing will be perfectly sufficient. It is a different question with the fittings, *i.e.*, the boxes, bends, tees, &c. These must be well made, and there must be no cheese-paring in their purchase, because if the interiors are not smooth the insulation is easily torn off the wires and leakage results.

A.M.I.E.E.

Correspondence.

Competition for Alterations to the Shire Hall, Bury St. Edmunds.

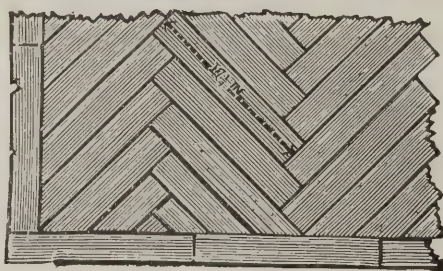
To the Editor of THE BUILDERS' JOURNAL.

LONDON.

SIR,—With reference to the above, and in answer to an enquiry from one of our members as to whether it was the intention of the committee to entrust the work to the author of the first-premiated design, provided the committee were satisfied as to his ability to carry it out, the county surveyor (who appears to be conducting this competition) has replied: "The committee certainly reserve their right of ultimate decision, but I feel certain they will take my advice as regards the same. I also think the selected design will be carried out in my office." In view of this remarkable statement our members have been advised not to compete. Your readers may be interested in this the latest phase of architectural competition.—Yours truly,
HENRY A. SAUL,
Hon. Secretary, Competition Reform Society.

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THE BUILDERS' JOURNAL

AND ARCHITECTURAL RECORD.

June 15, 1904. Vol. 19, No. 488.

6, Great New Street, Fetter Lane, E.C.

Summary.

The Leicester and Leicestershire Society of Architects have passed a resolution supporting the general principle of registration if carried out by the Institute. (Page 288.)

Judge Lumley Smith has decided that a carpenter's shop where mechanical power is used is not a "factory" within the meaning of the Workmen's Compensation Act. (Page 284.)

The Newcastle grammar school competition has been won by Messrs. Russell & Cooper, of London. (Page 281.)

Writing of the Crystal Palace, which celebrated its jubilee last week, Ruskin said: "For 300 years the art of architecture has been the subject of the most curious investigation. . . . And of all this refinement of enquiry, this lofty search after the ideal, this subtlety of investigation and sumptuousness of practice, the great result, the admirable and long-expected conclusion is that in the centre of the nineteenth century we suppose ourselves to have invented a new style of architecture when we have magnified a conservatory!" (Page 282.)

In Australia it appears there are a large number of so-called architects who do not scruple to undercut, and in one way and another act in a very unprofessional manner towards their fellow practitioners. "Honesty is the best policy," of course, there as in other countries, but it takes a long time to work up to an honest practice. The honourable architect has also to fight against long odds in matters of secret commission. (Page 283.)

The Dalmuir Works for treating the sewage from the western district of Glasgow have been opened. The next part of the scheme will be the Shieldhall Works, to deal with the sewage from the south side of the river. After the undertaking of the London County Council, it is the largest in the world. (Page 288.)

A correspondent says it is morally certain that the elevation of London Bridge has been spoiled by the alterations just completed. (Page 290.)

The chief advantages of hand-printed papers over those produced by machine are—more solid colour, clearness and separation of colours, the employment of heavier papers, ease of correcting irregularities, softer effect, production of small quantities of special designs at less cost. (Page 290.)

The latest payment in connection with our accident insurance scheme is that of £10 10s. to Mr. G. Hallett.

The New R.I.B.A. Council.

IN the ordinary course of events the election of new members to the council of the Institute is little more than a personal matter affording particular gratification to those concerned. One has come to regard the council not as a group of separate architects more or less distinguished, but rather as an entity embodying conservative principles of an institute incorporated by Royal Charter, an august body watching over the professional status of the architect and using its influence on behalf of the art of architecture. The Institute has its traditions, and these have been too strong for one or two new members to alter materially. Thus it is that the council elections are not ordinarily of paramount interest to the profession in general. At the present juncture, however, the new elections are of very great importance, for the result is practically the appointment of a registration council, and the probable development of its opinions will affect every architect, builder, surveyor, house and estate agent, and borough engineer in the Kingdom. According to the by-laws of the Institute the council consists of not more than thirty-eight members, namely, the president, four vice-presidents, the hon. secretary, eighteen members of council, four associate members, nine presidents of allied societies and the president of the Architectural Association. The following table shows last session's council and this, in the order enumerated above:—

Past Session.

Aston Webb.
John Belcher.
John Slater.
T. B. Colclutt.
A. Darbyshire.
Alex. Graham.
Ernest George.
J. S. Gibson.
W. H. Seth-Smith.
A. W. S. Cross.
S. B. Russell.
J. W. Simpson.
F. T. Baggallay.
G. F. Bodley.
C. E. Bateman.
J. J. Burnet.
J. Alfred Gotch.
E. T. Hall.
C. H. Heathcote.
E. W. Mountford.
G. H. Fellowes-Prynn.
Prof. Beresford Pite.
Leonard Stokes.
Arnold Mitchell.
R. S. Balfour.
H. V. Lanchester.
E. Wimperis.
W. J. N. Millard.
G. C. Ashlin (R.I.A.I.).
H. K. Bromhead (Glasgow).
J. W. Beaumont (Manchester).
A. H. Crawford (Edinbro').
A. W. Brewill (Nottingham).

Present Session.

John Belcher.
H. T. Hare.
S. Perkins Pick.
T. B. Colclutt.
A. Darbyshire.
Alex. Graham.
Ernest George.
J. S. Gibson.
W. H. Seth-Smith.
A. W. S. Cross.
S. B. Russell.
J. W. Simpson.
W. H. Atkin Berry.
A. C. Blomfield.
F. R. Farrow.
W. Flockhart.
G. Hubbard.
C. E. Mallows.
J. Douglass Mathews.
W. Gillbee Scott.
J. Slater.
Lewis Solomon.
Butler Wilson.
E. Woodthorpe.
R. S. Balfour.
H. V. Lanchester.
E. Wimperis.
W. H. Bidlake.
G. C. Ashlin (R.I.A.I.).
J. Keppie (Glasgow).
J. W. Beaumont (Manchester).
H. Davis (York).
A. W. Brewill (Nottingham).

Past Session—cont.

Arthur Harrison (Birmingham).
Joseph Wood (Bristol).
J. Woolfall (Liverpool).
Butler Wilson (Leeds).
H. T. Hare.

Present Session—cont

T. Cooper (Birmingham).
G. H. Oatley (Bristol).
H. L. Goddard (Leics.).
G. B. Bulmer (Leeds).
E. Guy Dawber.

A glance at the old and new names will show that the election has been a remarkable one. Of the eighteen members of council formerly in office, only six remain—Mr. Ernest George, Mr. J. S. Gibson, Mr. W. H. Seth-Smith, Mr. A. W. S. Cross, Mr. S. B. Russell and Mr. J. W. Simpson—while the twelve new members are almost without exception registrationists. We have already expressed ourselves in favour of that movement as likely to remedy some of the evils at present existing, and in so far as registration is concerned the new council can be regarded with considerable satisfaction. There can be no doubt that they will pursue the subject diligently. It is not likely that they will adopt the Society of Architects' Bill, but it is probable they will bring forward another without delay, and the matter will then have to be fought out in Parliament. That fight is likely to be a fierce one, for the Bill will affect so many members of the community that very considerable opposition to it is sure to be raised. We think, however, it will eventually be passed and put into operation, after which the good or ill policy of the scheme will remain to be determined. The new council of the Institute has a great work before it in this matter. It is well to remember, however, that registration is not the sole reason for a council's existence. There are the innumerable questions of professional practice, enactments and the position of architecture generally to be dealt with, and in that respect no well-informed architect can but regret the omission of some of those eminent architects who have been ousted from the council because they do not favour registration.

Our New Coupon.

ON p xxii of this issue will be found a new coupon which we have introduced for the express purpose of facilitating replies to advertisements. This should prove very useful to the reader and also advantageous to the advertiser, for there are many occasions when a person will not take the trouble to write a special letter for a manufacturer's catalogue or something similar, and it is just at such a time that our coupon will be especially appreciated.

BY-WAYS OF ITALY.

San Gemignano delle belle torri.

By F. HAMILTON JACKSON, R.B.A.

(Continued from p. 246 No. 485.)

SAN GEMIGNANO "of the fine towers" stands on one of the spurs of the Cornocchio on the north side of the Val d'Elsa, about six miles from Poggibonsi. Of the fifty towers which once bristled above its walls only thirteen remain, but they still make a very respectable show. The first mention of the city occurs in a document of 929 of Hugo, king of Italy, and the name cannot be earlier than the seventh century, since saints' names were not used in Italy for names of places before that date. A few Etruscan relics have been found, pointing to some earlier city having occupied the site, which is likely enough considering its lofty and isolated position. At the beginning of the thirteenth century it was re-walled, the suburbs being taken in. The older walls remain here and there, and the four gateways (which have no provision for doors) span the streets far within the outer circuit of the walls. In the fifteenth century, after the Commune had given itself to Florence, five great cylindrical towers were added to the fortifications and the castle was rebuilt. One of the piazzas was paved with hewn stones at the early date of 1255. In 1379 a heavy tax was imposed on the demolition of houses, the possessors being obliged to rebuild them under a penalty of 24 lire, and in most of the houses the internal arrangements are still mediæval.

The "Collegiata" shows eleventh-century work in the rough capitals of the columns of the nave and the side walls; the vaulting of it is quadripartite with ribs of the second half of the fourteenth century; the choir, the crossings and chapels are of the fifteenth. The ancient façade was of the thirteenth, but in the eighteenth century it was plastered and painted with architectural ornaments in the taste of the period, at the same time that the high altar was made. Giuliano da Majano was the designer of the

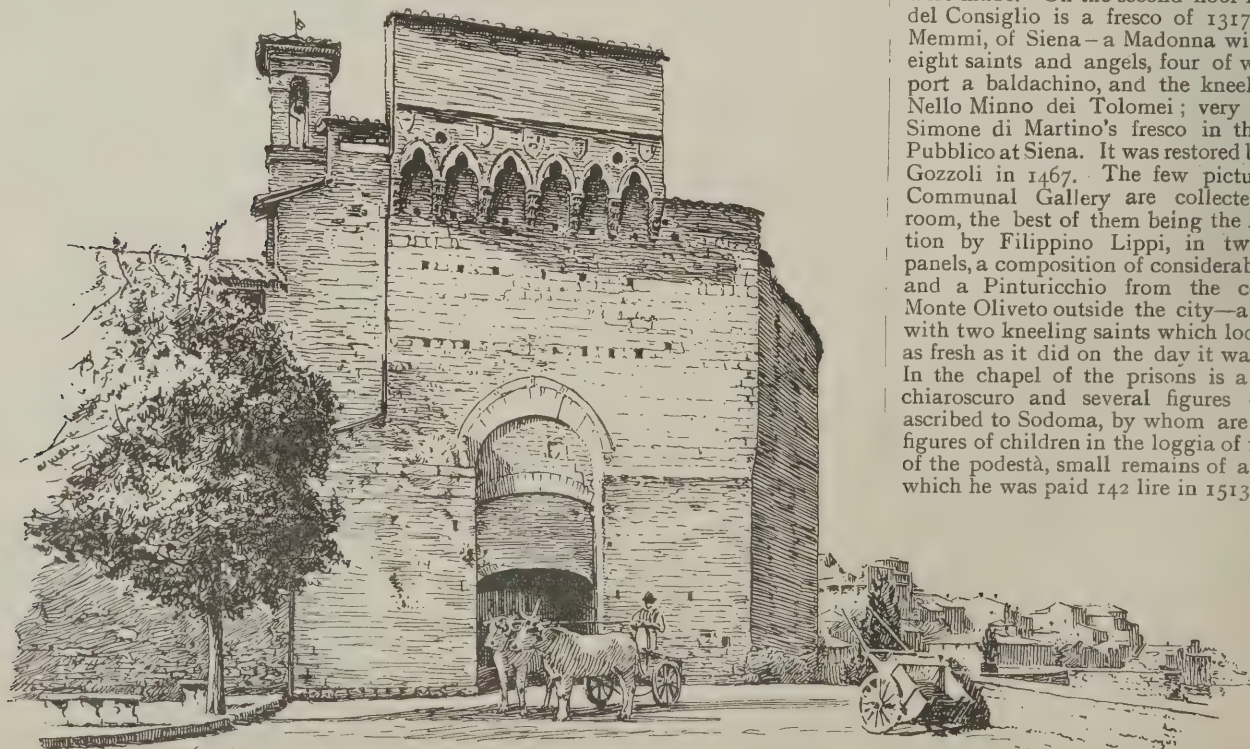
work done in the fifteenth century. In the choir the seats of the officials are ornamented with intarsia. There are in the nave a number of paintings of Scripture subjects by Bartolo di Maestro Fredi (1356), restored in 1745, and by Barna da Siena, who died in 1380 from injuries received by falling from the scaffold. His pupil Giovanni d'Asciano finished the paintings.

The chapel of S. Fina was built by Giulio da Majano in 1468, and painted by Domenico Ghirlandajo and Sebastian Mainardi, his pupil and son-in-law, probably in 1475—since the shrine of the saint made by Benedetto da Majano bears the following inscription with that date: "Miracula quæris? Perlege quæ paries vivaque signa docent." The high altar by him, displaced in the eighteenth century, bears the dates 1490 and 1493. In the choir are pictures from suppressed convents, among which are a Coronation of the Virgin by Piero Pollajuolo (1483) and a Madonna with four saints by Benozzo Gozzoli (1466). On the entrance wall is an enormous Martyrdom of S. Sebastian by Benozzo Gozzoli, and over the choir arch a Doom by Taddeo di Bartolo. The oratory of S. Giovanni which opens from the nave contains an Annunciation by Ghirlandajo painted in 1482. Near the entrance is a fourteenth-century wooden group, an Annunciation, by "Martinus Bartholommæi," of Siena.

The next most interesting church is S. Agostino, in which are Benozzo Gozzoli's interesting series of seventeen paintings from the life of St. Augustine, painted between 1463 and 1466, and most of them still in excellent preservation. There are five compartments on each side wall, and seven at the end around the large rectangular window which lights the choir behind the altar; on the vault are the four Evangelists, while the soffit of the arch bears Christ and the twelve Apostles in circles. On the piers are figures of saints. Gozzoli's assistant in this work was Giusto d'Andrea, who had worked with Neri di Bicci and Fra Filippo Lippi. The church was built in 1280 and contains also a large S. Sebastian sheltering the people of S. Gemignano from the plague, painted in

1464. Gozzoli signed the "Baptism of St. Augustine" on April 1st, 1464, before commencing the S. Sebastian, in case he should be killed by the plague while painting it. There are also paintings in the church by Bartolo di Fredi, Sebastian Mainardi and Vincenzo Tamagni, the last two natives of the town. At the end of the nave to the left of the door by which the church is generally entered is a masterpiece of Benedetto da Majano, the altar of S. Bartolo, made in 1494, for which he was paid sixty florins, with seventeen added for ornaments not included in the original contract. The beautiful roundel of the Madonna and Child and the adoring angels are set out on slabs of porphyry in the same manner as in the Strozzi chapel at S. Maria Novella, Florence. The floor is of majolica tiles. There are other churches which have early architectural portions still remaining in them, of which the most interesting are S. Bartolo (seen through the arch in the drawing), formerly S. Matteo, the façade of which is of the twelfth century, and S. Jacopo, of about the same period, which contains thirteenth-century frescoes. These were both Templars' churches.

Opposite to the cathedral is the Palazzo del Podestà, now a theatre, which has considerable remains of ironwork on the façade, a deep archway on the ground floor with seats around it, and the "torre Rognosa" or tower of the Commune, which was a standard for the height of private towers, none higher being allowed. It was built between 1248 and 1337. A clock was put in the tower in 1407 which cost 150 florins of gold and was made by Maestro Luca Bondi of Cortona. In 1462 it was worn out, and another was commissioned from Maestro Francesco degli Orioli, of Florence. The largest bell is dated 1328, the second 1341, and the smallest 1245. After the subjection to Florence the podestà lived in the Palazzo del Popolo, and this palace was made a public inn where hospitality might be shown to foreigners, to the podestà and other officials on their entry into and retirement from office. The new palace of the podestà was begun in 1288 and enlarged in 1323, at which time an arch across the alley at the side was made. It has a balcony in front approached by steps on each side, the "ringhiera" from which proclamations were made. On the second floor in the Sala del Consiglio is a fresco of 1317 by Lippo Memmi, of Siena—a Madonna with twenty-eight saints and angels, four of whom support a baldachino, and the kneeling donor Nello Minno dei Tolomei; very much like Simone di Martino's fresco in the Palazzo Pubblico at Siena. It was restored by Benozzo Gozzoli in 1467. The few pictures of the Communal Gallery are collected in this room, the best of them being the Annunciation by Filippino Lippi, in two circular panels, a composition of considerable beauty, and a Pinturicchio from the convent of Monte Oliveto outside the city—a Madonna with two kneeling saints which looks almost as fresh as it did on the day it was painted. In the chapel of the prisons is a fresco in chiaroscuro and several figures of saints, ascribed to Sodoma, by whom are also two figures of children in the loggia of the palace of the podestà, small remains of a fresco for which he was paid 142 lire in 1513.



S. GEMIGNANO: THE GATE TOWARDS VOLTERRA. DRAWN BY F. HAMILTON JACKSON, R.B.A.

The palaces of the Ardinghelli and Salvucci, the leaders of the two factions, are close to the piazza. Of the former two towers and part of the house remain, now the post-office. Twenty-seven years ago it was an inn, and the present writer had a room in one of the towers to which one went by a stair of four steps through the thickness of the wall beneath a pointed arch. The latter was entirely destroyed in the tumults of 1352 and 1439. Under the piazza at the side of the post-office is a large rainwater cistern capable of holding 20,000 gals. and still in use. The well-head was made in 1273 and restored in 1346. There are also several fountains, one of which, outside the picturesque Porta alla Fonte, dates from the thirteenth century and was enlarged in the fourteenth century by the art of Wool. It has cavernous arches (see next page), beneath which the tank is full of water, reminding one of the Sienese fountains, though less magnificent in proportion and ornate in the matter of mouldings.

Many of the houses still show mediæval

details in brick and stone on their façades as well as within. Each of the palaces has an equal frontage, a statute of 1255 prescribing that each house should be twelve braccia across and twenty-four long. The arches vary between round and pointed, with the occasional appearance of a Moresque type. The palace, which tradition ascribes to Desiderius, the Lombard king, is really a building of the fourteenth century.

The Exchequer officials used to meet on the steps of the principal church to transact business before the end of the thirteenth century, and on special occasions in the choir itself, with the judge of appeal presiding. One of the glories of San Gimignano is to have received Dante as ambassador for Florence in 1299, when he came to renew the Tuscan league and to strengthen it. The plague of 1348 committed fearful ravages, killing the podestà, five out of the signory, and reducing the council of the people to only fifty-five. When the Florentines asked for thirty foot soldiers, only twenty-four and a captain could be provided! It is said that

30,000 persons perished in the town and the surrounding district. In 1353 the Commune finally submitted to Florence, with great politeness on both sides, the San Gimignano sending a blank parchment with the seal of the Commune attached, on which the Florentines were to write the conditions of surrender—they returned it with two blank sheets for the citizens to write their own terms. In the thirteenth and fourteenth centuries the Commune borrowed at from 20 to 25 per cent. interest! After that time they trusted to the Jews, who, however, deserted the place in 1730 because they were not allowed to charge more than 10 per cent. They came back again forty years later under an agreement by which they had the right to charge outsiders twice as much as natives. In 1680 no one would accept the office of gonfalonier or chamberlain, since they had been imprisoned for the debts of the Commune.

A couple of miles outside the town from the Porta S. Matteo stands the interesting little church of Cellole on a hill. Here there was once a lazaretto, in which S. Bartolo, whose tomb is in S. Agostino, died in 1299 at the age of seventy-two, after governing it for twenty years. The hospital was founded in 1202 by Giovanni di Viviano, and the Commune took it over in 1294. In the fourteenth century it received the name of S. Bartolo. The church is older and bears on certain of its stones inscriptions of 1133 and 1190, while around the apse, both inside and out, is some very curious and early ornamentation resembling chip-carving in character, with rough interlacings suggesting cut-up fragments of some fifth- or sixth-century building. The nave has seven bays supported by columns with rather curious caps. Half-way up a pier occurs upon which are some remains of painting. The roof is of wood supported on seventeenth-century brackets. The central apse is vaulted with arcading around it, and a central small window with colonettes beneath the arcade. The rest of the arcading is supported on corbels, but beneath each is a little cap placed on the base moulding which runs around the apse. The tympanum of each arch is elaborately carved, and there is a similar cornice with dentils below. The baptistery is at the end of the south aisle, divided from the nave by a wall occupying the space of one bay, an arrangement similar to that at S. Giovanni dei Lebbrosi at Palermo. Above the western door is a two-light window with a slender central colonette and a pierced cross above it, and there are little round headed windows at the ends of each aisle. The doors are of the early Lucca type, with a lintel supported on corbels and a circular arch above: besides that at the west end, a small one in the south aisle gives access to a little garden with pergolas of vine and peach trees trained against the church wall close to a large tank. The later campanile is halfway along the west side of the enclosing building, which is now a farmhouse, no doubt once the cloister of the lazaretto. In front of the church is a pleasant green place planted with little trees.

(To be concluded.)

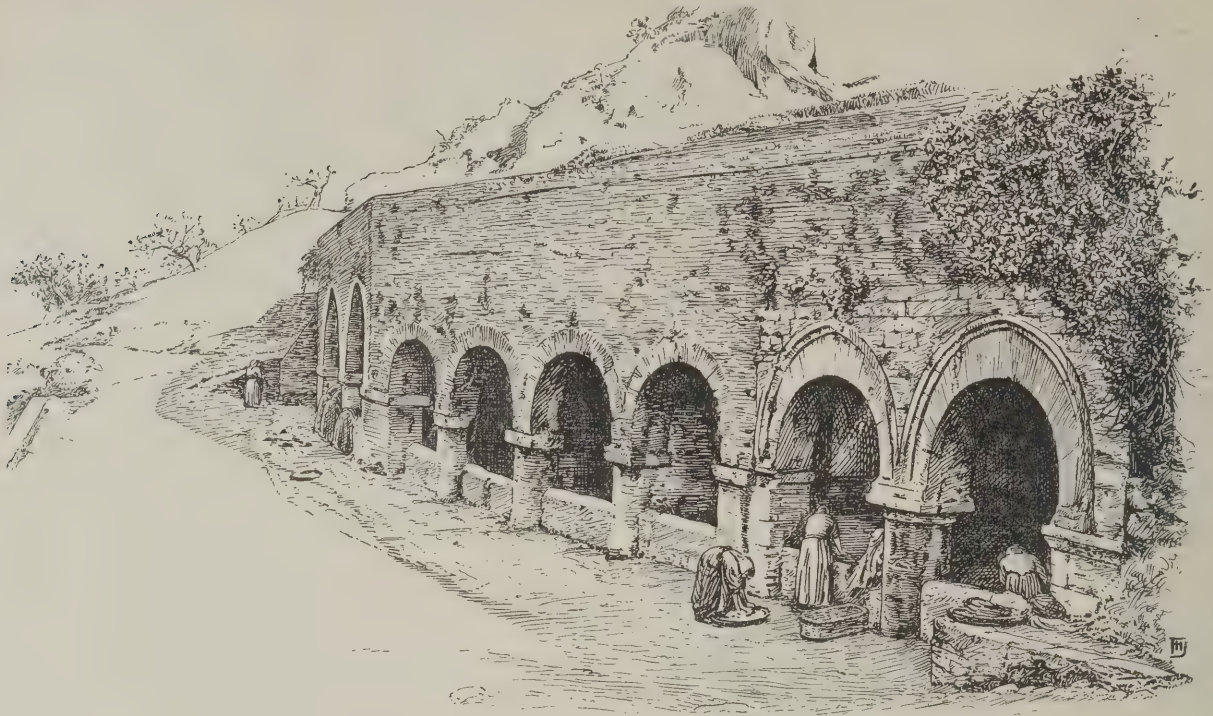
The Foundation-stone of Liverpool Cathedral will be laid by His Majesty the King on July 19th.

Newcastle Grammar School Competition.—The first premium (£100) has been awarded to Messrs. Russell & Cooper, London, W.C.; the second (£50) to Mr. Francis W. Bedford, London, W.; and the third (£25) to Messrs. Ashford & Gladding, Birmingham. The designs (117 in number) are on exhibition at the Town Hall, Newcastle-upon-Tyne, from 10 to 6 until to-morrow at 3 p.m.

B

S. GEMIGNANO: THE MAIN STREET AND ANCIENT GATEWAY.
DRAWN BY F. HAMILTON JACKSON, R.B.A.





THE FOUNTAIN, S. GEMIGNANO. DRAWN BY F. HAMILTON JACKSON R.B.A.

WHITGIFT HOSPITAL, CROYDON.

CONSIDERABLE discussion in regard to the proposed demolition of this interesting old building has been going on in the "Standard." Some say its removal is really necessary because it is a dangerous obstruction to traffic at the busiest part of the town. "A Twenty-five Years' Resident" observes, however, that "for many years past pettifogging widenings have been carried out on the opposite side of both North End and George Street with the sole object of accentuating the danger of Crown Hill corner through the existence of the ancient building. Owing to the apathy of what I may term our London population, the management of our affairs is left to the local tradesmen, whose sole aim appears to be to create as many shop sites as possible. Only a few years since a fine old fifteenth-century archway, which once formed the entrance to Croydon Palace, was destroyed by the Corporation."

On Monday a deputation waited on the Croydon County Council to voice a protest against the proposal to demolish the hospital. The deputation was organized by the Croydon Antiquities Protection Committee, and was introduced by Viscount Midleton, the Lord Lieutenant of Surrey; it included representatives of the Surrey Archaeological Society, the Society for the Protection of Ancient Buildings, and the National Trust.

The "Times" says: "If the street improvement is really needed it would seem reasonable to ask that the council should give a much closer attention than has yet been paid to the possibility of devising a scheme which shall affect the desired improvement at a less price than the destruction of Croydon's chief antiquity. It might, for instance, be borne in mind that there are two sides to a street. At any rate, the county council may be urged to give a very serious and careful consideration to the views which Lord Midleton will lay before it this afternoon on behalf of those who think that its main street will be unspeakably the poorer if robbed of its chief architectural feature, the memorial of an historic personage nobly charitable to those less fortunate than himself. Is the presence of such

a monument of no value to those who are daily occupied in the exhilarating rivalry of the industrial battlefield? Here there stands a sermon in stone indeed—a sermon advocating the broadest doctrine—that of human charity. If this interesting monument of Whitgift's love for his 'brethren and sisters' be swept away, Croydon will lose that which she cannot well afford to lose, and that which can never be replaced."

JUBILEE OF THE CRYSTAL PALACE.

THE Crystal Palace celebrated its jubilee last Friday, on which day an interesting article appeared in the "Times," from which the following extracts are taken:—

The Palace has become so familiar an institution during the half-century which has elapsed since 1854 that it is a little difficult for the present generation to understand the interest taken in its establishment. Hopes were founded upon it which have hardly been realized in all their fulness; for it is no exaggeration to say that not only was the Palace regarded as marking a stage in the development of English architecture, but it was also believed that it would exercise an immense, a permanent and an ever-increasing influence in the direction of English culture and refinement. It was confidently predicted that the examples of ancient and modern art contained within its walls would serve to educate the masses, to inspire the artists and craftsmen of the future, and to set up a standard of taste infinitely superior to any which had previously existed in this country.

After the Exhibition there was a very general desire to preserve the building. A special commission was appointed to report on the different useful purposes to which it could be applied. The Government, however, refused to purchase the building; and it was only on the initiative of Mr. Leech, a private gentleman, that it was saved from destruction. Mr. Leech's idea was to form a company which should buy the building as it stood and transfer it to some more appropriate spot. In the spring of 1852 the purchase money was paid, and the Crystal Palace Company was formed with a capital

of £500,000 in shares of £5 each. The capital, however, was subsequently enlarged to £1,000,000, and before the works in the building and grounds were concluded this amount was considerably increased. Sir Joseph Paxton accepted the position of director of the winter garden, park and conservatory; Mr. Owen Jones and Mr. Digby Wyatt, who had distinguished themselves by their labours in the old Crystal Palace, became directors of the fine art department and of the decorations of the new structure; Mr. Charles Wilde, the engineer of the old building, filled the same office in the new one; and Messrs. Fox & Henderson, the contractors for the original edifice, undertook the work of construction.

The first column of the new building was raised by Mr. Laing on August 5th, 1852; and shortly afterwards Messrs. Owen Jones and Digby Wyatt were sent to the Continent to procure examples of the principal works of art in Europe.

In several respects the new building differed from its predecessor in Hyde Park. Three transepts were introduced instead of one, and the roof of the nave was arched instead of flat, being thus raised 44ft. higher than the old nave. The appearance of the Crystal Palace at Sydenham is more graceful than that of its prototype; but at the present time it is more easy than it was in 1854 to understand the righteous indignation of Mr. Ruskin at the excessive laudation of the building. Mr. Laing had described it, on the occasion of the opening, as an entirely novel order of architecture, an utterance which called forth from Mr. Ruskin a characteristic and eloquent pamphlet. He wrote:—

"For 300 years the art of architecture has been the subject of the most curious investigation; its principles have been discussed with all earnestness and acuteness; its models in all countries and of all ages have been examined with scrupulous care, and imitated with unsparing expenditure. And of all this refinement of enquiry, this lofty search after the ideal, this subtlety of investigation and sumptuousness of practice, the great result, the admirable and long-expected conclusion is that in the centre of the nineteenth century we suppose ourselves to have invented a new style of architecture when we have magnified a conservatory!"

ARCHITECTS IN AUSTRALIA.

A Letter from Sydney.

AT one of the several successful meetings of the Discussion Section of the Architectural Association this session Mr. P. Leslie Waterhouse, M.A., read a paper on the advantages or disadvantages of starting a practice in the Colonies. His paper consisted of expressions of opinion which he had obtained from Mr. Herbert Butler (Cape Colony), Mr. John Begg (Bombay), and information he had received from other colonies, to which he added his own remarks. During the discussion which followed Mr. Arnold Seaward Tayler, A.R.I.B.A., of Westminster, read the following interesting letter from his friend Mr. G. Sydney Jones, of Sydney:—

"In the letter of November 2nd you ask me to give you my impressions, good and bad, of a colonial practice. I do not know that I am very well fitted to speak for such a practice, for though I am an Australian with Australian ideas I received the most impressionable part of my training in England, and have never altogether lost that—to a Colonial—distinctively English sense of things with which one becomes imbued after a few years on English soil. However, I will say what I think, and you can take my opinions for what they are worth in your own mind.

"I shall tell you, firstly, of the position which an architect takes generally amongst his professional brethren and in the public eye; then go on to point out the abilities and disabilities under which he works; and, lastly, touch upon the opportunities, or want of them, which confront him in the practice of our art in this part of the world.

"Firstly, then, as to the architect's position and standing. It must be borne in mind that this is comparatively a young country, and, being so, like all young countries it has an attraction for the man who makes haste to get gold (whether he gets it honestly or not is of little moment to him and most of his class). And so we have here a large number of so-called professional men who do not scruple to undercut, and in one way and another act in a very unprofessional manner towards their fellow practitioners. The clean man, therefore, and the honest fares badly at first, and it is only by dint of forcefulness and enthusiasm for his work that he keeps his head above water. 'Honesty is the best policy,' of course, here as in other countries, but it takes a long time to work up an honest practice. Then the view the man in the street takes of the position of the architect is not exactly a kindly view, I am sorry to say; so many private people have been bitten that they are now twice shy in employing architects to build their houses; and further, unfortunately, the policy of the present Government is to keep the designing of all national works in its own Departments of State, where the day-labour craze has almost run wild, so there is no help for architects from that source—not at present at all events; though it is to be hoped the near future will alter this condition of affairs, and it is the opinion of many that it will. The man in the street cares next to nothing for architecture; and though he must have buildings, so long as they touch his pocket as little as possible he is satisfied with anything, whether it be good, bad or indifferent.

"The position of the architect you will note, therefore, is at present not a bright one in this country, but it remains for those of us who have enthusiasm and desire the welfare of our art to fight against these drawbacks, which I incline to think are little by little becoming less powerful as the country grows older and the public becomes better educated in matters architectural.

"Secondly, as to the abilities and disabilities

under which an architect works. Apart from those I have mentioned, the practitioner here who wishes to act the honourable architect has to fight against long odds in the secret commission business. Secret commissions and the practice of accepting them are rife here—merchants are entering your offices every day, and when they ask what they are to allow you as commission they are, to put it mildly, surprised when you tell them that you never accept such things, and reply that it is done every day and is a recognized thing (secretly recognized, of course). Then again, hinging perhaps on the above matter, is the difficulty of retaining clients. However well you may do your work for your client, and however well you may satisfy him, there is no certainty that he will come to you when he again wishes to build. It is a remarkable characteristic of a colonial practice—this evanescence, so to call it. A man may have a fine practice for a few years, when suddenly it will largely disappear for no apparent reason. I could name several well-known firms of reputable architects whose practices have been seriously affected in this way, and it is almost unaccountable; but it seems to be characteristic of perhaps all young countries, where men come and go quickly. How very different is it with you in England, whose clients, once obtained, never leave you until you treat them to bad work!

"Lastly, as to the opportunities which lie before an architect in this country. This is the bright side of the picture. The opportunities, notwithstanding the objections and drawbacks to success mentioned above, are manifold. A man who is competent and enthusiastic, who has his work at heart, and is not afraid to put his shoulder to the wheel, must in course of time succeed. The natural materials to success are all at hand. A magnificent climate, bright sunshine, clear skies, fine building materials, an enormous amount of building large and small continually going on in both city and country—there you have some idea of the opportunity which presents itself to any man who is in love with his work and is able to do it.

"My advice, however, to any who think of throwing in their lot with those of us on this side of the world is to weigh well the chances, for, all things considered, they are at first somewhat against a man, the profession here overflowing with would-be architects, all sorts and conditions of them, though mostly men of the wrong sort. Nevertheless a strong man of ability is sure to come to the top, as I have said, in course of time; but he must be prepared to wait."

Law Cases.

Architects' Certificates.—The case of *Robins v. Goddard* came before the King's Bench Division last Thursday. In this action the plaintiff, a builder, claimed £1,055 from the defendant upon the final certificate of the defendant's architect pursuant to a building contract between them. The defendant relied on condition 30 of the conditions of the contract, as set out below. He alleged that the amounts which purported to be allowed by the certificate for work and materials were not in accordance with the provisions of the contract and were unreasonable and excessive, and that the work and materials were not in accordance with the contract or as specified, but were defective, imperfect, unsuitable and incomplete, with the result that he would have to incur great expense in re-executing much of the work and in the purchase of proper materials. He accordingly claimed damages for the plaintiff's alleged breaches of contract, and his counsel urged that the particulars should be referred to an official referee. The

plaintiff contended that under the terms of the contract the counter-claim could not be maintained. The following were the material portions of the contract: "16. The architect shall, during the progress of the works, have power to order in writing from time to time the removal from the works, within such reasonable time or times as may be specified in the order, of any materials which in the opinion of the architect are not in accordance with the specification or the instructions of the architect, the substitution of proper materials, and the removal and proper re-execution of any work executed with materials or workmanship not in accordance with the drawings and specifications or instructions; and the contractor shall forthwith carry out such order at his own cost. In case of default on the part of the contractor to carry out such order, the employer shall have power to employ and pay other persons to carry out the same; and all expenses consequent thereon or incidental thereto shall be borne by the contractor, and shall be recoverable from him by the employer, or may be deducted by the employer from any moneys due or that may become due to the contractor. 17. Any defects, shrinkage or other faults which may appear within twelve months from the completion of the works, arising in the opinion of the architect from materials or workmanship not in accordance with the drawings and specifications or the instructions of the architect, or any damage to pointing by frost appearing within the like period, shall upon the directions in writing of the architect, and within such reasonable time as shall be specified therein, be amended and made good by the contractor at his own cost, unless the architect shall decide that he ought to be paid for the same; and in case of default the employer may employ and pay other persons to amend and make good such defects, shrinkage or other faults or damage, and all expenses consequent thereon or incidental thereto shall be borne by the contractor and shall be recoverable from him by the employer, or may be deducted by the employer from any moneys due or that may become due to the contractor. 30. No certificate of the architect shall be considered conclusive evidence as to the sufficiency of any work or materials to which it relates, nor shall it relieve the contractor from his liability to make good all defects as provided by this agreement." The architect's final certificate was in the following form: "I hereby certify that the sum of £1,055 17s. 2d. may be paid to Mr. A. W. Robins, of 11, High Street, Wanstead, in full settlement of all claims for extras and work under contract dated October 15th, 1902, being balance ascertained to be due after adjustment of accounts."—Mr. Justice Farwell, in delivering judgment, said that it was an action on an architect's certificate and was really undefended. But the defendant had put in a counterclaim for damages, and that raised a question as to the construction of the building contract. In such cases the employer used the services of an architect, who was generally named in the contract, for his own protection. The builder could recover nothing except under the architect's certificate given under clause 30. There was a proviso to the clause, and the defendant contended that this should be treated separately, but, in his Lordship's opinion, it must be read with the preceding clauses, 16 and 17. The contract then became quite plain and reasonable. The effect was that the architect was made a referee as between the parties to the contract. The defendant now asked the Court or a referee to decide as to alleged defective materials and workmanship. That was provided for by clause 17, and unless the architect expressed an opinion unfavourable to the contractor there was nothing for the Court to decide. Therefore there was no case on the counter-claim, and there must be

judgment for the plaintiff for the amount claimed, with costs. A stay of execution was granted on terms.

Carpenters' Shops and the Workmen's Compensation Act.—In the City of London Court last Wednesday his Honour Judge Lumley Smith, K.C., delivered a considered judgment of some importance in the cases of *Brown v. Welch* and *Cheshire v. Welch*. These were applications under the Workmen's Compensation Act for compensation for injuries sustained by carpenters in the employment of the respondent, a builder and contractor of Aldersgate Street. Brown was working in a carpenter's shop. A saw hanging on a nail fell off on to his foot and broke his toe. There was no machinery in the place. A carpenter's shop where no mechanical power was used was not a "factory" within the meaning of the Act. Cheshire was standing on a wall, stacking scaffold-poles on the flat roof of the builder's shop. It was contended that he was employed in or about a "warehouse." His Honour, however, was of opinion that the employment was not in or about a warehouse. Judgment for respondent with costs.

Bricks and Mortar.

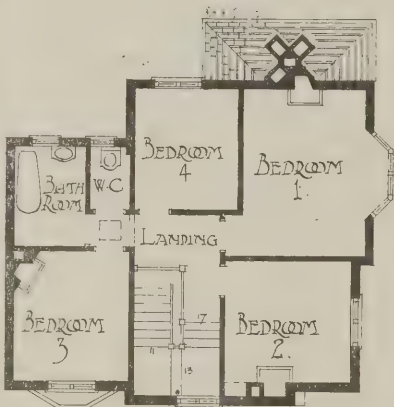
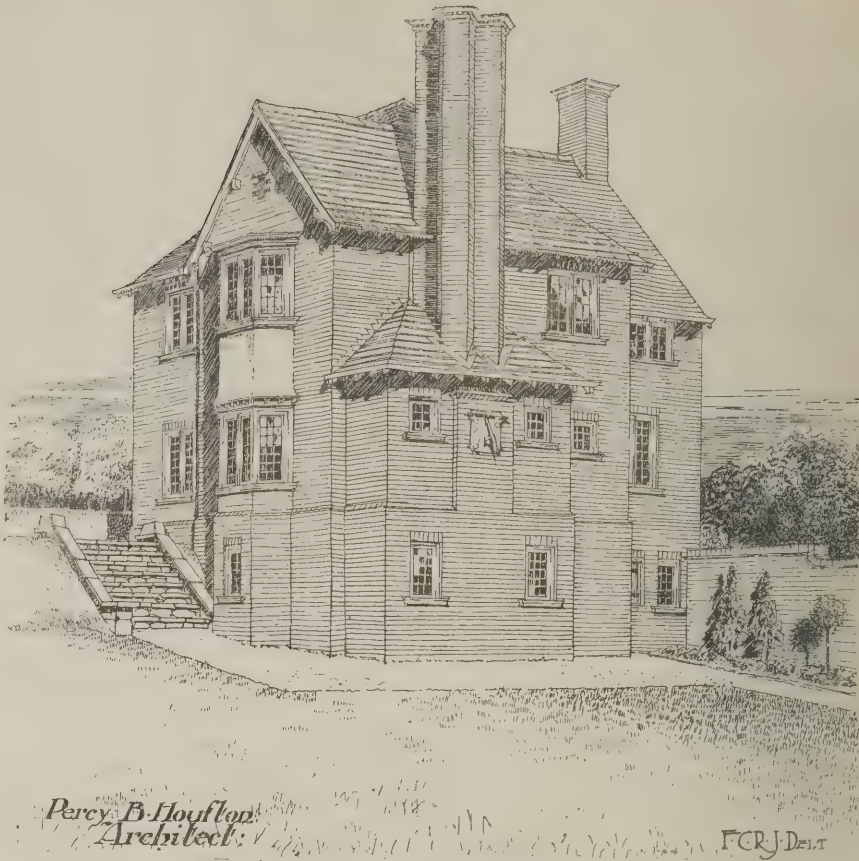
Aphorism for the Week.

As the architecture of a country always follows the earliest structures, American architecture should be a refinement of the log-house.
—NATHANIEL HAWTHORNE.

Our Plates. THE Wesleyan Church at Middleton seats between 500 and 600 people. The interior and exterior walls are faced with common white headers, with a liberal use of Runcorn stone for dressings and finishings. The nave and chancel are lofty and are lighted with two large windows and a clearstory. The whole of the roofs are of open-timber—pitch-pine—construction. The timbers are left untouched to allow them to mellow to a natural warm tone. The roofs are covered with Yorkshire stone slates of selected sizes. The nave and chancel are divided by a low wall which, with the pulpit and font, are of Runcorn stone. The chancel-seating and woodwork are of oak left natural. The nave seating is in pitch-pine stained green. All the windows are filled with diamond lead-lights. The buildings are heated with hot moistened air, with which is incorporated a system of ventilation. All the exterior walls of the school facing the quadrangle are cemented and are distempered white. The quadrangle, which is approached from Long Street through the large gateway, has a grass lawn with enclosing brick walls entered by three sets of terrace steps, and is planted with an avenue of blossoming trees. Flower beds are formed against the church-school walls. Mr. Edgar Wood, A.R.I.B.A., of Manchester, was the architect, and Messrs. Nichol & Son, of Rochdale, were the main contractors.—The drawing of Wynn Lodge, Barnet (Mr. Sydney W. Cranfield, A.R.I.B.A., architect), is exhibited at this year's Royal Academy.

House at Chesterfield.

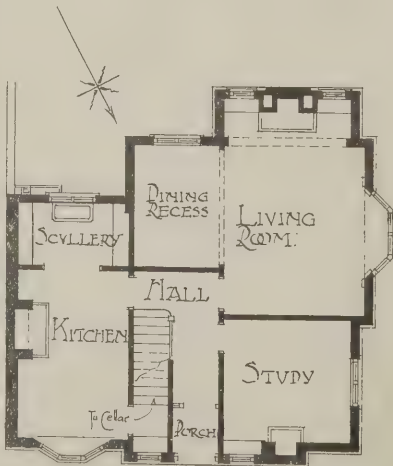
This house was designed for an end site having little view to the south but open to the west. The idea of the plan was to provide one really good living-room. As carried out, the rooms are more uniform in size and thereby conform more nearly to the conventional house of this class, but at some sacrifice of convenience and interest. The materials are sand-faced Leicestershire bricks, American green slates and white painted woodwork. The architect is Mr. Percy B. Houfton, of Furnival Chambers, Chesterfield.



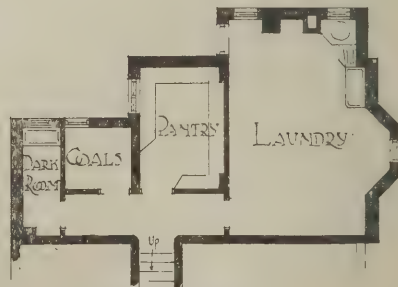
FIRST-FLOOR PLAN.



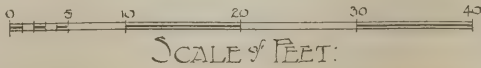
WEST ELEVATION.



GROUND-FLOOR PLAN.

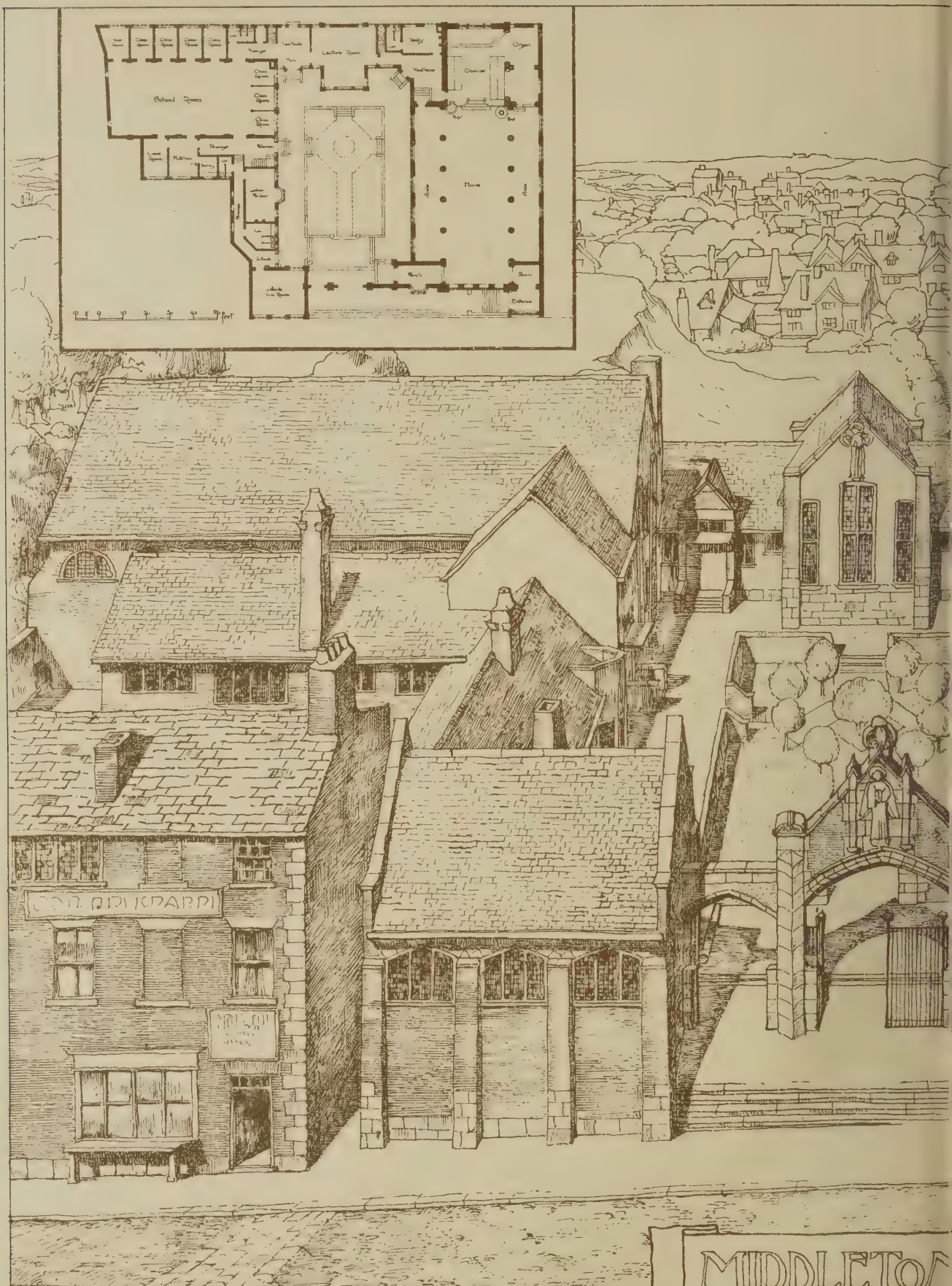


BASEMENT PLAN.



HOUSE AT CHESTERFIELD.

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BRADFORD EXHIBITION: THE INDUSTRIAL HALL.

BRADFORD EXHIBITION.

WHEN good progress had been made with the building of the Cartwright Memorial Hall in Lister Park, Bradford, the suggestion was mooted that its opening might be made the occasion of an exhibition. The magnitude of the scheme somewhat surprised the Corporation at first, but it was decided to go on, and in due course the hall and the exhibition were opened last month. Apart from the hall itself, which has been illustrated in our columns (a view from the north having been published as a centre

plate in our issue for May 4th), the two chief buildings of the exhibition are the Industrial Hall and the Concert Hall, shown by photographs on this page. The hon. joint architects are Mr. James Ledingham, F.R.I.B.A., and the city architect of Bradford, Mr. F. E. P. Edwards, A.R.I.B.A., who have also designed the several other buildings of the exhibition. The main body of the Industrial Hall is 300ft. long, with an average width of 180ft. It consists of a central nave 60ft. wide running the full depth of the building, with three transepts on either side, each 60ft. by 120ft. From the above view it will

be seen that the building presents an imposing front and is well treated in the centre with two high towers. The Concert Hall is also pleasing in its general treatment: the tops of the corner towers are especially good. Both buildings have been constructed of corrugated iron covered with fibrous plaster. About 6,000 sq. yds. of soil had to be removed in order to obtain the levels for the Industrial Hall, and this will need to be put in order again after the exhibition closes—in October next. At Glasgow about £16,000 was spent in restoring the park after the exhibition.



BRADFORD EXHIBITION: THE CONCERT HALL.

(Photographs by Rosemont, Leeds.)

JAMES LEDINGHAM, F.R.I.B.A., AND F. E. P. EDWARDS, A.R.I.B.A., HONORARY JOINT ARCHITECTS.

A CENTURY OF BUILDING PRICES.—VI.

By T. E. COLEMAN, F.S.I.

(Continued from p. 228, No. 483.)

Skyring's Builders' Prices for 1875.—cont.

PAINTER'S WORK.

"Common colours, with the best white lead or white of zinc."

Plain Painting:—	s. d.
Once in oil, including knotting	per yd. super. 0 5
Twice in ditto, including stopping	- ditto 0 8
Four times in oil	- ditto 1 0
French green, deep blue, or other superior colours, add	- ditto 0 2½

Skirtings, &c.:—	
Plain narrow skirtings not exceeding 3in. wide once in oil	- per ft. run 0 1½
Ditto twice	- ditto 0 2
Ditto four times	- ditto 0 3
Ditto exceeding 3in. wide once in oil	- ditto 0 2
Ditto twice	- ditto 0 3
Ditto four times	- ditto 0 4
Rainwater pipes and gutters once in oil	- ditto 0 2½
Ditto ditto twice	- ditto 0 3½
Ditto ditto four times	- ditto 0 5

Sash Frames:—	
Frames once in oil not exceeding 25ft. super.	- each 0 9
Ditto twice ditto	- ditto 1 3
Ditto four times ditto	- ditto 1 9
For large or Venetian frames add one-third.	

Sash Squares:—	
Sash squares once in oil not exceeding 30in. super.	- per dozen 0 9
Ditto twice	- ditto 1 3
Ditto four times	- ditto 1 9
If the squares exceed 30in. add for each coat.	- ditto 0 4

Graining, &c.:—	
Graining oak, combed and shadowed	- per yd. super. 2 0
Varnishing once in best copal	- ditto 0 8
Ditto twice ditto	- ditto 1 0
Writing plain letters	- per inch 0 1

Gilding:—	
Gilding in oil gold with plain work	- per ft. super. 3 6
Ditto in burnished ditto	- ditto 4 6

Paper-hanging:—	
Hanging lining paper	- per piece 1 6
Ditto common paper	- ditto 1 6
Ditto satin paper	- ditto 1 0
Pumicing, sizing and preparing walls	- ditto 0 6

GLAZIER'S WORK.

Best crown glass in new sashes in squares 1ft. 6in. to 2ft.	- per ft. super. 1 0
Thirds ditto	- ditto 0 7
Crown glass ground in squares 1ft. 6in. to 2ft. ditto	- ditto 1 2
Best polished plate glass and glazed in new sashes 50ft. to 55ft. super.	- ditto 4 3
Ditto 10ft. to 12ft. super.	- ditto 3 10

PLUMBER'S WORK.

Milled lead cut to sizes	- per cwt. 29 0
Ditto in gutters, flats, hips or ridges	- ditto 32 0
Ditto in step flashings	- ditto 34 0

Daywork Prices (1875).

LABOUR.

Bricklayer	- per hour 0 10
Labourer	- ditto 0 6
Mason	- ditto 0 10
Carpenter or joiner	- ditto 0 10
Plasterer	- ditto 0 10
Plumber	- ditto 0 10

MATERIALS.

Bricks:—	
Place bricks	- per hundred 3 6
Stock	- ditto 4 0
Cutters	- ditto 8 0
Stourbridge firebricks	- ditto 15 0
Tiles:—	
Pantiles	- per hundred 10 6
Plain tiles	- ditto 5 0
Limes, Mortar, &c.:—	
Chalk lime	- per hundred 13 0
Stone lime	- ditto 15 0
Mortar	- per load 19 6
Roman cement	- per bushel 1 10
Sand	- per load 6 6
Laths, Hair, &c.:—	
Fir laths (single)	- per bundle 2 0
Oak laths	- ditto 5 0
Hair	- per bushel 1 4
Whiting	- per dozen 0 8
Deals and Battens:—	
12ft. run of 2½in. battens	- each 4 2
Ditto 3in. ditto	- ditto 4 9
12ft. run of 2½in. deals	- ditto 6 2
Ditto 3in. ditto	- ditto 7 1
Hard Woods:—	
lin. wainscot	- per ft. super. 0 11
lin. oak	- ditto 0 8
lin. Honduras mahogany	- ditto 1 0
lin. Spanish ditto	- ditto 2 0
lin. elm	- ditto 0 4

Ironmongery, &c.:—	
4in. cast butts with screws	- per pair 0 11
4in. wrought ditto	- ditto 1 3
18in. cross garnet, or hook and eye hinges	- ditto 1 6
10in. bright rod bolts	- each 1 4
7in. two bolt locks	- ditto 3 9
2in. brass sash pulleys	- ditto 1 4
lin. screws	- per dozen 0 2½
2in. ditto	- ditto 0 4½
4in. ditto	- ditto 0 9½

MATERIALS—cont.

Ironmongery, &c.:—	
Glue	- per lb. 0 9
White wash line	- per yd. run 0 1½
White lead	- per lb. 0 4
Solder	- ditto 1 0
½in. lead pipe (middling)	- per ft. run 0 6
lin. ditto (ditto)	- ditto 1 4
2in. ditto (ditto)	- ditto 2 8
lin. brass stop cock	- each 7 6
lin. bib cock	- ditto 9 0

Some representative items indicating the average current rates of builder's work in the London district are now given for purposes of comparison.

Builders' Prices for 1904.

EXCAVATOR'S WORK

Digging and throwing out in common soils in trenches to foundations, &c., not exceeding 6ft. deep	- per yd. cube 1 0
Ditto in gravel or stiff clay	- ditto 1 6
Add if wheeled not exceeding 20yds., including filling barrows	- ditto 0 5
For wheeling every additional 20yds. add	- ditto 0 1½
Carting away (not exceeding 1 mile), including filling carts	- ditto 2 6

All Labour materials. only.

Concrete Work:—	
Lime concrete in the proportions of 1 part ground stone lime to 6 parts gravel	- per yd. cube 10 6 2 6
Portland-cement concrete ditto ditto	- ditto 15 6 2 9

It will be seen that the cost of digging is now considerably greater as compared with the prices quoted twenty-five years ago, for during that period the wages paid to navvies or excavators have increased by about 50 per cent. The increased cost of concrete work is also chiefly due to this cause, but at the same time concrete is now much more carefully made than was formerly the case in a great many instances.

BRICKLAYER'S WORK.

NOTE.—The prices are based on stocks at 40s. per thousand delivered on the site.

Brickwork:—	
Stock brickwork laid dry as in wells, &c.	- per rod 14 15 0 2 15 0
Ditto in walls in lime mortar ditto	- ditto 16 10 0 5 10 0
If built with blue lias lime add	- ditto 0 10 0 —
Stock brickwork in Portland-cement mortar (1 to 2)	- ditto 18 10 0 6 0 0

Facings:—
Extra to ordinary stock brickwork for facings, including pointing.

Picked stock facings, finished with neat struck weathered joint, the perpendiculars being kept and neatly cut both edges	- per ft. super. 0 2 0 1½
Best red facings and ditto	- ditto 0 5 0 1½
Best white facings and ditto	- ditto 0 5½ 0 1½

Arches:—
Extra to ordinary stock brickwork for arches, including pointing.

Rough axed arches in stocks, including pointing	- per ft. super. 0 6 0 3
Rubbed and gauged arches, and set in putty	- ditto 2 3 1 7

Pointing:—
Tuck pointing to new walls, the scaffolding not being removed

Cut joint pointing to ditto	- per ft. super. 0 3 0 2
Extra only for erecting and removing scaffolding where required	- ditto 0 1 0 0½

Tuck pointing to old fronts, including erecting and removing scaffolding, raking out joints, washing, stopping and staining the brickwork, stopping the arches with cement, neatly coloured and drawn

Brick Paving:—
Stock brick flat paving in sand

Ditto on edge	- per yd. super. 2 10 0 10
Ditto flat paving in mortar	- ditto 3 6 1 4
Ditto on edge	- ditto 4 4 1 11
Ditto flat paving in cement	- ditto 4 0 1 6
Ditto on edge	- ditto 5 0 2 2

Pantiling:—
Pantiling, laid dry to 10in. gauge, including ½in. by 1in. pantile laths

Pointing inside only, add	- per square 25 0 5 3
Plain tiling:—	
Plain tiling laid to ¾in. gauge, including double fir laths	- per square 64 0 11 6

SLATER'S WORK.

Best Bangor Ladies slating, zinc nailed, and laid with 3in. lap	- per square 38 0 9 6
Ditto Countess ditto ditto	- ditto 42 0 8 0
Ditto Duchess ditto ditto	- ditto 40 0 7 0
Add extra for copper nails	- ditto 2 0 —

MASON'S WORK.

Stone:—	
Portland stone in block, including cartage and waste, hoisting 30ft., and set in lime mortar	- per ft. cube 3 9

MASON'S WORK—cont.

Stone—cont.	
Bath stone (as Portland, before)	- per ft. cube 2 9
Aberdeen granite ditto ditto	- ditto 6 9
Devon ditto ditto ditto	- ditto 5 6

Labour on Stone:—	
Half sawn or half plain work to beds and joints	- per ft. super. 0 6 0 3
Plain work rubbed	- ditto 1 0 0 6
Rough sunk work to beds and joints	- ditto 0 10 0 5
Sunk work rubbed	- ditto 1 9 0 11

Labour on Granite:—

Half plain work to beds and joints	- per ft. super. 1 3 1 2
Plain work (fine axed)	- ditto 2 9 2 6
Rough sunk work to beds and joints	- ditto 2 6 2 4
Sunk work to faces	- ditto 4 3 4 0

Steps:—

9in. by 6in. York stone steps, rubbed on tread and riser, back jointed and set in cement	- per ft. run 2 10
12in. by 6in. ditto ditto	- ditto 3 9

Window Sills:—

8in. by 4in. Portland stone window sills, rubbed, weathered and throated, with stopped ends and stools, grooved for iron tongue, and set in mortar	- per ft. run 2 6
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Stone Paving:—

3in. York paving, quarry tooled on face, with squared joints and laid in mortar	- per ft. super. 1 4
Ditto rubbed on face and ditto	- ditto 1 7
3in. York landing, rubbed on face, with squared joints and set in mortar	- ditto 2 0

CARPENTER'S AND JOINER'S WORK.

All Labour materials. only.

Fir Timbers:—	
Fir in scantlings, without labour in fixing	- per ft. cube 2 3 —
Fir in lintels, wall-plates, &c.	- ditto 2 8 0 5
Fir framed in floor joists	- ditto 3 0 0 9
Fir wrought and framed	- ditto 4 0 1 9
Fir wrought, framed and rebated	- ditto 4 6 2 3
Ditto ditto and beaded	- ditto 4 9 2 6
Fir wrought proper door and window frames, and put together with white lead	- ditto 5 0 2 9

English Oak:—

English oak in scantlings, without labour in fixing	- per ft. cube 6 0 —
Ditto in lintels, wall-plates, &c.	- ditto 6 9 0 9
Ditto in framed work	- ditto 7 9 1 9
Ditto wrought and framed	- ditto 8 9 2 9
Ditto ditto and rebated	- ditto 9 6 3 6
Ditto ditto ditto and beaded	- ditto 9 10 3 10
Ditto in wrought proper door and window frames	- ditto 10 6 4 6

Bracketing:—
Bracketing to common coves and cornices, including plugging

Centering:—	
Common centering for plain arches or vaulting, including fixing and removal	- per square 27 6 10 0

Turning pieces to rough arches with ¼in. soft, including fixing and removal

Rough Boardings, &c.:—	
lin. deal rough boarding, laid complete as to roofs, &c.	- per square 20 6 2 9
Ditto edges shot	- ditto 21 6 3 9
½in. sound boarding with double fillets	- ditto 24 0 6 3

lin. wall battens 2½in. wide, fixed 12in. apart

If plugged to walls add	- ditto 8 6 2 9
Gutter boarding:—	
lin. deal gutter boards and framed bearers	- per ft. super. 0 7½ 0 3½

Floors:—

lin. white deal machine-prepared, grooved and tongued floor-boarding, laid complete in batten widths to floors, &c.	- per square 27 6 5 6
lin. yellow deal, ditto ditto	- ditto 31 6 5 6
¼in. ditto ditto ditto	- ditto 34 0 6 0

It will be seen that ordinary floor-boardings are now much cheaper since the general introduction of woodworking machinery.

All Labour materials. only.

Larch Deal:—	
lin. deal rough and fixed	- per ft. super. 0 4½ 0 1
Ditto edges shot	- ditto 0 5 0 1½
Ditto wrought one side and edges shot	- ditto 0 5½ 0 2½
Ditto ditto two sides and ditto	- ditto 0 6½ 0 3

Skirtings:—

lin. deal torus moulded skirtings, including backings and fillets complete and scribing to floors	- per ft. super. 0 10 0 4½
¾in. rough deal narrow skirting grounds, including plugging to walls	- per ft. run 0 2½ 0 1½

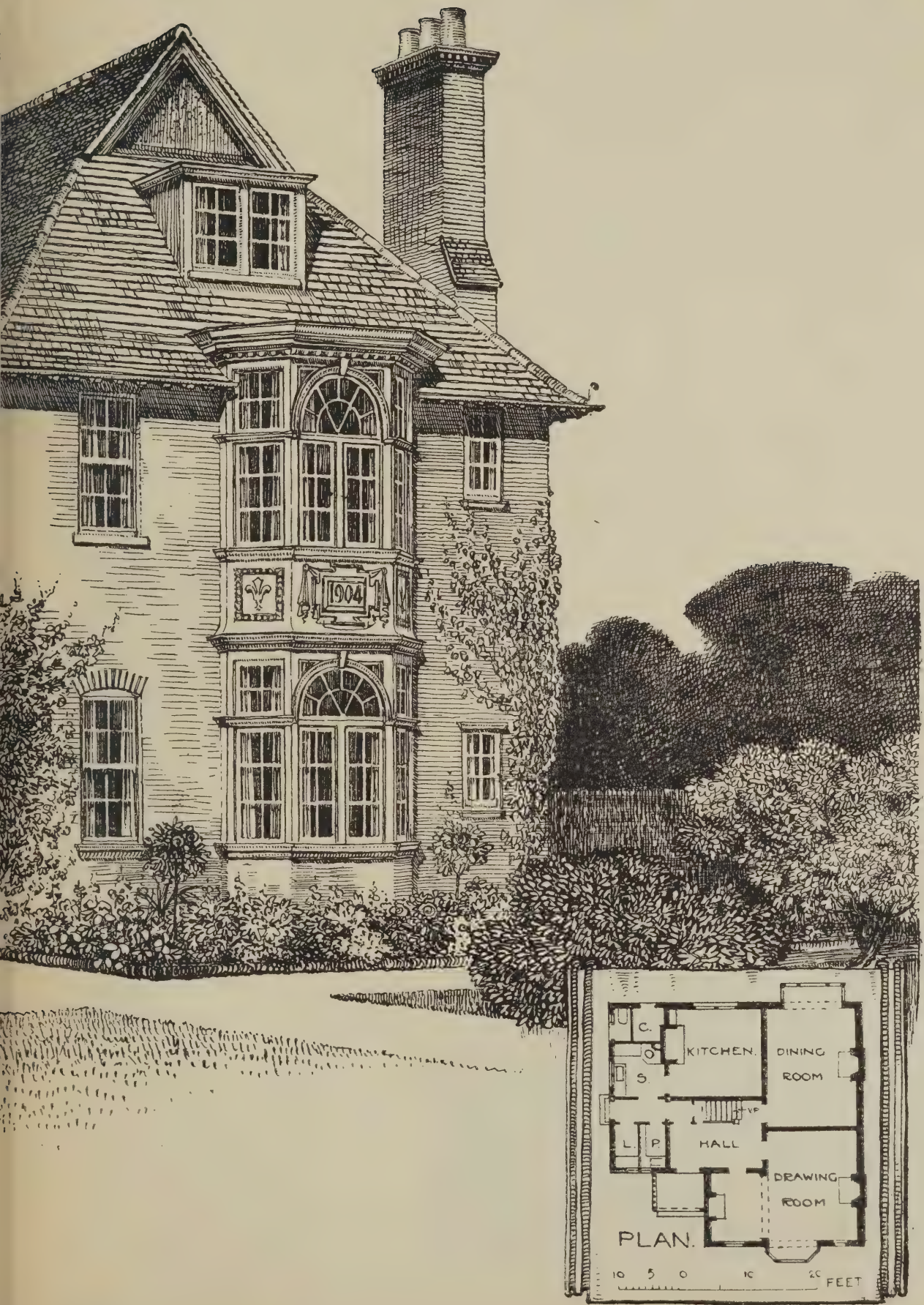
Sash Frames:—

Deal cased frames, oak sunk and weathered sills, grooved for tongue and window board, lin. deal outside and inside linings, 2in. heads, 1½in. pulley pieces tongued to inside and outside linings, ¾in. parting beads, ¾in. back linings and parting slips, 1½in. and ¾in. inside beads, prepared for 1½in. double hung sashes and fixed	- per ft. super. 0 8½ 0 4½
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CARPENTER'S AND JOINER'S WORK—cont.

	All materials.	Labour only.
	s. d.	s. d.
Sash Frames—cont.		
Deal cased frames, &c., for 2in. double hung sashes and fixed - per ft. super	0 10	0 5½
5½in. by 3½in. fir proper casement frames with oak sunk and weathered sills, prepared for 2in. casements and fixed ditto	0 11	0 6
Sashes:—		
1½in. deal moulded sashes and fitted - per ft. super.	0 6½	0 4
2in. ditto ditto - ditto	0 8	0 4½
Add if double hung in cased frames, including lines and weights - ditto	0 3	0 1½
Doors:—		
1in. deal wrought, matched and beaded ledged door, including hanging - per ft. super.	0 7½	0 4
1½in. deal four-panel bead butt and square framed door and ditto - ditto	1 1	0 8½
Ditto ditto moulded and square ditto ditto - ditto	1 1	0 6½
2in. deal wrought framed and braced door, or gate, filled in with ½in. wrought, ploughed, tongued and beaded boarding - ditto	1 2	0 9

PLASTERER'S WORK.

Walls:—		
Rendering one coat with hair mortar - per yd. super.	0 9	0 5
Render one coat and set with fine st. ff. ditto	1 0	0 7
Render, float, and set with fine stuff ditto	1 5	0 10
Render one coat with half Portland cement and half sand, ½in. thick, including trowelled face - ditto	2 5	1 3
Ceilings and Partitions:—		
Lathing - - - per yd. super.	0 9	0 5½
Lath and plaster one coat - ditto	1 6	0 10½
Lath, plaster and set with fine stuff ditto	1 9	1 1
Ditto ditto ditto and set with fine stuff ditto	2 2	1 4
Ditto ditto ditto and set with putty and plaster - ditto	2 6	1 6
Cornices:—		
Plain plaster cornices - per ft. super.	1 4	0 9
Colouring, &c.:—		
Limewhiting one coat - per yd. super.	0 1	0 0½
Ditto two coats - ditto	0 1½	0 1½
Clearcoille and whiten ceilings - ditto	0 3½	0 1½
Wash, stop, clearcoille and whiten ceilings in old work - ditto	0 5	0 2½
Wash, stop and colour one coat in common colours - ditto	0 4½	0 2
Ditto ditto in superior colours - ditto	0 6	0 3

PAINTER'S WORK.

Plain Painting:—		
Knot, stop and paint one coat plain painting - per yd. super.	0 5	
Ditto ditto two coats - ditto	0 8	
Ditto ditto four coats - ditto	1 0	
Skirtings, &c.:—		
Knot, stop and paint one coat on skirtings, mouldings, &c., including cutting in both edges - per ft. run	0 1½	
Ditto ditto two coats - ditto	0 2	
Ditto ditto four coats - ditto	0 3	
Scrape, prepare and paint one coat on rain-water pipes, eaves gutters, &c. - ditto	0 0½	
Ditto ditto two coats - ditto	0 1½	
Ditto ditto four coats - ditto	0 2	
Sash and Door Frames:—		
Knot, stop and paint one coat on sash and door frames (one side) - each	0 8	
Ditto ditto two coats - ditto	1 0	
Ditto ditto four coats - ditto	1 6	
Sash Squares:—		
Knot, stop and paint one coat on sash squares (one side) - per dozen	0 9	
Ditto ditto two coats - ditto	1 3	
Ditto ditto four coats - ditto	2 3	
Graining, Varnishing, &c.:—		
Graining oak, including combing and shadowing - per yd. super.	1 6	
Varnish one coat with best copal varnish ditto	0 8	
Ditto two coats - ditto	1 2	
Writing plain letters - per inch	0 0½	
Gilding:—		
Preparing and gilding with best oil gold in plain work - per ft. super.	3 0	
Paperhanging:—		
Hanging white lining paper - per pie	0 8	
Trimming and hanging common wallpapers - ditto	0 10	
Ditto satin papers - ditto	1 0	
Add extra for stripping off old paper, including washing, stopping and preparing walls to receive new paper - ditto	0 10	

GLAZIER'S WORK.

15oz. best quality sheet glass and glazing in new sashes in squares not exceeding 3ft. super.	0 5½
15oz. third: ditto ditto - ditto	0 4½
Best polished plate glass and glazing in new sashes 5ft. to 5½ft. super. - ditto	3 3
Ditto ditto 9ft. to 12ft. super. - ditto	2 3

PLUMBER'S WORK.

Milled sheet lead cut to size - per cwt.	19 0	2 0
Ditto in gutters, flats, flashings, &c. ditto	23 0	6 0

(To be continued.)

Views and Reviews.

Clarke's Tables.

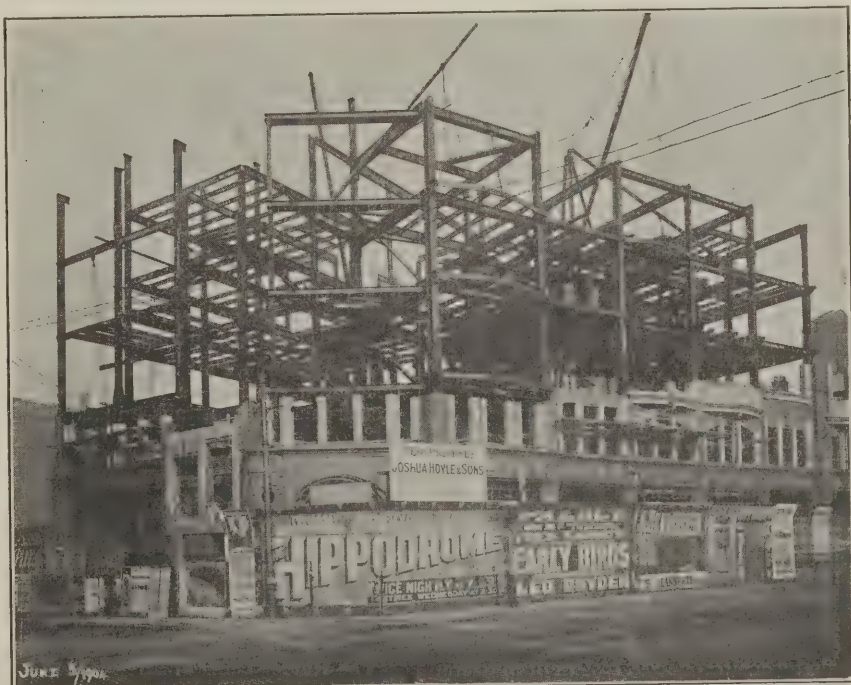
The fourth edition of Mr. J. Wright Clarke's pocket-book of tables and memoranda is very useful, but it contains much erroneous matter. On the subjects upon which Mr. Clarke is an expert, such as plumbing and pumps, the information is very good, but in respect of the allied subjects of drainage, ventilation, &c., is likely to cause error, either by reason of absolute mistakes or ambiguity. Thus we find iron lightning-conductors admitted as advisable in some situations—a most dangerous suggestion to put in a book where space forbids proper qualification. The statement as to the space protected by conductors also requires modification. The Birmingham wire gauge is given, whereas the British standard gauge is now generally used. Specific gravities of various materials are stated, but without any explanation of what specific gravity is; similar instances occur throughout the book and often depreciate its usefulness, for building mechanics do not, as a rule, know any science. On p. 84 "apparati" is given as the plural of apparatus, and there are many incongruities in literary expression throughout the book. The statement that baths and waste-water should not discharge over a grating is very disputable. When we come to ventilation the statements are laughable: a table is included of specific gravities of gases such as muriatic acid, fluosilicic acid (whatever that may be), sulphurous acid, superheated hydrogen, cyanogen, as though it were likely one would have to study the weights of such gases in ventilation, let alone the wrong names given to the gases evidently meant. The definition too that "ventilation is the act of expelling impure air and noxious vapours and replacing them by pure air" is not wide enough, for the supply of air for lowering the temperature in theatres, &c., is more important than the mere supply of pure air, while in laundries ventilation is for removing moisture. What, too, is the value of a statement of how long it would take for death to ensue in a room hermetically sealed—in a book where space is wanted for only the most important

matter? Then, again, the statements that outside walls are colder than inside walls because of air passing through them, and that a person feels colder on the side nearest the wall because of these air currents, simply betray complete ignorance of the elementary facts of ventilation and heating. This little chapter is full of other errors which we have not space to deal with. The electrical tables and memoranda, being by a practical man, Mr. E. C. Roche, A.I.E.E., are excellent.

"A Pocket-Book of Tables and Memoranda for Plumbers, Builders, Sanitary Engineers, &c." A collection of facts, figures and formulae compiled by J. Wright Clarke. Fourth edition, revised and enlarged. London: B. T. Batsford, 94 High Holborn, W.C., price 1s. 6d.

Sewerage in Tropical Countries.

This is a small book, a reprint of the Belilios Prize article in "The Journal of Tropical Medicine." The merits which secured not only a prize, but the benefits of such extended publication, are by no means clear. The criticism is mainly destructive, and the author is curiously fickle in his views—whether from an intense desire to be impartial on the merits of the different known methods of sewerage or because he disapproves of all those methods is not quite clear. In the early part of the work cesspools are strongly advocated (pp. 28, 29, 30), an opinion at least retrogressive; later (p. 32) we are told that the modern water-carriage system is "probably as perfect as any at present known." But this grudging appreciation is immediately followed by a vehement attack on the system because pipes may break, joints may leak, drains may contaminate the water pipes, and water-closets are generally improperly used by the poor. All human affairs are liable to breakage, leakage and effects of neglect and abuse, and criticism of this kind is not worth serious attention. Later, however, the water-carriage system is advocated for Freetown, Sierra Leone, a station with which the author is well acquainted. After a perusal of this work we feel there is little to be said for the other competitors for the Belilios Prize. The information on sewerage in the tropics is scanty; the concessions demanded by climate, religious and caste requirements, and native customs are barely touched upon; the methods of treating sewage in inland towns are not



This shows a large advance in the fireproof flooring, steelwork and terra-cotta. As the speed of erection of terra-cotta, however great, cannot be adequately shown by a photograph week by week, we shall in future publish views at intervals of a month. The next view will appear therefore in our issue for July 13th.

THE BUILDING OF HOYLE'S WAREHOUSE, MANCHESTER (Photograph taken on June 3rd).
CHARLES HEATHCOTE AND SONS, ARCHITECTS.

dealt with. The general villainy of man, both white and black, in dealing with sewerage matters forms the burden of the author's song, and we hardly think it will pay our readers to peruse a catalogue of sins and errors that could be obviated by proper and adequate supervision.

"Drainage, Sewerage and Conservancy in Tropical Countries and Elsewhere," being the Bellios Prize Article on "The System of Drainage and Sewerage (Domestic and Municipal) best suited for Tropical Climates," by Major F. Smith, D.S.O., R.A.M.C., D.P.H., &c., &c. London: John, Bale, Sons & Danielson, Ltd., 83-91, Great Titchfield Street, W., price 2s. nett.

Quantity Surveying.

Leaning's "Quantity Surveying" is undoubtedly the standard work on the subject, and we are glad to see by the fifth edition that the author appreciates this fact. The edition has been enlarged and revised very materially, and the price is now 25s. nett: but in view of the extra value given we are sure this increase in price will not be regretted by those for whom the volume is published. The section on prices has been entirely rewritten and greatly enlarged, now filling 320 pages. The importance of this subject to the quantity surveyor, as the author thinks, affords a good reason for the comparatively large part of the book devoted to it. There is much useful information, and many interesting remarks show the author is cognizant of the secrets of many firms of building contractors, who will perhaps not relish so much being thus exposed in print. As there is a growing tendency to obtain competitive prices for such specialities as machinery, engines, boilers, electric lighting, &c., rather than to give them into the hands of specialists and include a provisional lump-sum item in the bill of quantities, Mr. Leaning has wisely added sections dealing with these. A schedule for demolitions has been included; also short sections on arbitration from the surveyor's point of view, charges and deficient quantities, and some new examples of taking-off. Mr. Leaning is naturally severe on the architect who dares to take out his own quantities—indeed on anyone but the trained specialist quantity surveyor—and in general we agree with him, for as he well says: "The war of wits between the quantity surveyor and the astute builder's clerk yearly increases in severity. In the offices of many contractors every item of the bill of quantities supplied is checked, as the work proceeds, by the actual quantity of material sent to the building, and any imperfection in a description is made the foundation of an extra charge." To the chief argument in favour of the architect preparing his own quantities, namely, that an architect knows what he requires in a building much better than any quantity surveyor can know, the author offers the following reply: "To this it may be answered that the cleverest architects frequently repeat themselves, and that a quantity surveyor who is used to a certain architect's methods of procedure can interpret his intentions with surprising accuracy." There is, of course, a good deal of truth in this, but it applies just as well to the writing of the specification, which Mr. Leaning thinks could best be written by the surveyor, a practice which may foster regularity and machine-like exactitude but certainly does not make for art and variety. Mr. Leaning's methodical ways are praiseworthy in his capacity as a quantity surveyor, but individuality and local tradition are things to be encouraged, and quantity surveying is not an exact science, nor can it ever become one. We quite agree with Mr. Leaning when he says that "one recognized system of measurement throughout the Kingdom should certainly be the object which the profession should strive to realize," but when he talks of "building experts who should rather be arbiters than followers of a fashion" and

local customs being difficult to change, we fear that the standardization will affect likewise the specification and the design. Some architects take particular care to study local traditions and conditions and include on their drawings and in their specifications the terms used by local builders for certain kinds of work prevalent in certain districts, and thus they acquire the charm of real organic art which is so wanting as a rule in the hard, codified, systematic, machine-like architecture produced by the modern contracting system and the modern contractor with the quantity surveyor hanging on his tails.

"Quantity Surveying: for the Use of Surveyors, Architects, Engineers and Builders," by J. Leaning. Fifth edition. London: E. & F. N. Spon, Ltd., 125, Strand, W.C., price 25s. nett.

Keystones.

A new House and Chapel of the Cowley Fathers is being built in Great College Street, Westminster, at an estimated cost of £12,170.

A new Isolation Hospital at Rothwell, Leeds, has been erected at a cost of about £10,000 from designs by Mr. W. E. Richardson, architect, of Rothwell.

Change of Address.—Mr. Fleetwood Buss, P.A.S.I., quantity surveyor, has moved from 44, Theobalds Road, to 4, Verulam Buildings, Gray's Inn, W.C.

In Memory of Cardinal Vaughan a secondary school for boys is to be erected close to Westminster Cathedral. It will cost £25,000.

Leicester and Leicestershire Society of Architects: Resolution supporting Registration.—At a special general meeting of this Society held on June 3rd a resolution was passed "that the general principle of statutory qualification of architects, if carried through on the initiative of the Royal Institute of British Architects, is desirable in the best interests of architecture and those who practise it."

The new Town Hall at Hereford was opened on Thursday last. It has been erected at a cost of £25,000. Mr. H. A. Cheers, of Twickenham, was the architect, his design having been selected in competition, and Mr. W. J. Bowns, of Hereford, was the builder. The old town hall, the quaint black and white piece of architecture which used to stand on oak supports in the High Town, was pulled down so long ago as 1861.

Mr. Harrison Townsend, F.R.I.B.A., is the architect of a new church which has just been completed at Great Warley, Breatwood. The decorative work of the interior is in the hands of Mr. W. Reynolds Stephens. The contractor was Mr. Silas Parmenter, of Brentwood. The peal of nine bells came from the foundry of Messrs. Gillett & Johnston, of Croydon; and the organ, which still awaits its case, was built by Messrs. Norman & Beard, Ltd., of Norwich.

Christ Church, Port Sunlight, was formally opened on Wednesday. It has been built at a cost, including fittings and equipment, of £28,000, and presented to the village by Mr. Lever. The church is of Helsby red sandstone and will seat 600 persons. It is 15ft. in length, 51ft. wide, with transepts projecting about 22ft. The general fabric has been carried out by Messrs. Lever's building department, the font, pulpit, lighting, stained glass, &c., having been entrusted to contractors. Messrs. William & Segar Owen, of Warrington, were the architects.

The Roscoe Chair of Architecture.—In the current issue of "The Sphinx" (Liverpool University Magazine) will be found a portrait of Professor C. H. Reilly, who was recently appointed to the Roscoe Chair of Architecture. The number also contains some

interesting facts concerning the professor's career. He is an old student of Queen's College, Cambridge, and left it in 1896 with a first-class in the engineering tripos. During the past four years he was lecturer in architecture and building construction at King's College, London.

Builders' Notes.

Additions to the Infirmary at Farnham and the new Schools at Thornton Junction, Fife-shire, are being warmed and ventilated by means of Shorland's patent Manchester grates, supplied by Messrs. E. H. Shorland & Brother, of Manchester.

Leicester Painting Trade Dispute Settled.—The points as to working rules in dispute between the master and operative painters of Leicester have all been settled. The chief disagreement related to apprenticeship and walking time.

South Wales Building Trades Employers' Federation.—At the quarterly meeting held at Newport, Mon., last week, the following were elected:—President and chairman, Mr. Watkin Williams, Pontypridd; senior vice-president, Mr. W. T. Morgan, Cardiff; junior vice-president, Mr. W. A. Linton, Newport; treasurer, Mr. William Thomas, Cardiff; auditors, Messrs. W. O. Jenkins, Swansea, and T. James, Pontypridd; secretary, Mr. W. H. Billings, Swansea. The next meeting will be held at Pontypridd.

On the "Strand Island," at the eastern end, a temporary corrugated iron building has been erected for the international congress of the Salvation Army which opens on June 24th. The building will hold 5,000 people, and externally will be treated (foolishly) to resemble stonework, completed by a red-tiled roof of boards. In its construction 80 tons of steel, 60 tons of galvanized sheeting, 200 tons of timber, 5,000ft. of glass, 60,000ft. of boarding, 500 tons of concrete and 30,000 bricks will be used. The builders are Messrs. Humphreys, of Knightsbridge.

Building Societies.—A lecture on this subject was delivered on May 30th by Mr. J. A. McDermott, corporate accountant, secretary of the Portman Chapel Building Society, at the offices of the London Society of Corporate Accountants, 14, Queen Victoria Street, E.C. The lecturer dealt with the history of building societies, and then lucidly described the effect of the whole of the Acts of Parliament relating to them: he also dealt in detail with the forms of account and referred to the general management of such societies. A discussion followed in which the chairman (Mr. Charles Penney, B.A.), Mr. Hallett Fry, F.S.S., F.C.I.S., Mr. F. W. Stephens, A.C.I.S., Mr. J. H. Worrall, A.C.I.S., Mr. T. Bowden Green and Mr. C. Louch took part.

Purification of the Clyde.—With the ultimate object of purifying the Clyde the Corporation of Glasgow have for several years been carrying out a vast drainage scheme. The first stage was reached seven years ago, when the Dalmarnock Works, which treat the sewage of the eastern portion of the city, were put into operation. The Dalmuir Works, dealing with the sewage of the western district of the city, and also of Partick and Clydebank, have now been formally opened, and the drainage scheme, so far as the north side of the river is concerned, is complete. The next step will be the carrying out of the south side scheme, and the building of the Shieldhall Works. The whole scheme is being carried out under the superintendence of Mr. A. B. McDonald, city engineer. Next to the undertaking of the London County Council, it is the largest in the world.

Enquiries Answered.

The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Grained Work.

RADLETT.—SUBSCRIBER writes: "In your issue for last week, under answers to S.K. examinations, question 30, it is stated that 'the careful householder should know that for wear nothing is so permanent . . . as grained work.' Why should grained work be better than ordinary paint and varnish?"

We presume our contributor was thinking of the non-liability to show marks which certainly makes grained work more "lasting" in that respect than ordinary paint and varnish. This has been the experience in the Rowton Houses, to mention one instance. At the same time we regard the practice with disfavour, as it is essentially false, and we do not consider it desirable that men should have to spend years learning how to make a cheap wood look like an expensive one. Graining, however, is undoubtedly going out of vogue, and we welcome the time when genuine paint-work shall have entirely superseded it.

Factory Roof-Truss to carry Shafting.

BIRMINGHAM.—SUBSCRIBER writes: "The accompanying sketch (re-drawn) shows a wrought-iron roof principal being used in a factory. It has been designed with the idea of supporting the shafting by means of hangers bolted between the iron ties. What would be the safe load to put on each principal in the positions shown?"

Taking the external forces, including weight of truss, as equivalent to a vertical loading of $\frac{1}{2}$ cwt. per ft. super. of area covered, and the hanging loads as 10 cwt. at each of the two points shown in Fig. 1, 3 ft. from centre of stanchion, the frame diagram will be as in Fig. 2 and the stress diagram as in Fig. 3. As regards the hanging loads for the shafting, Fig. 4 shows the problem to be worked out for the 6 ft. bay and Fig. 5 for the 9 ft. bay. In the former the greatest bending moment will be $\frac{5 \times 3 \times 12}{20} = 9$ in.-tons and the direct tension 3.5 tons; in the latter the greatest bending moment will be $\frac{3 \times 10 \times 3 \times 12}{20} = 12$ in.-tons

and the direct tension 1.2 tons. The effect will be worked out as follows:—Taking the right-hand half of Fig. 6, the neutral axis of the section will be

$$\frac{2(3.5 \times 5)2.25 + 2(2 \times 5)2.5}{2(3.5 \times 5) + 2(2 \times 5)} = \frac{8.375}{5.5}$$

= 1.523 in. above the base. The moment of inertia (I) of the section will be found graphically as in Fig. 7, where I = (DAG + dag), or by calculation as in left-hand half of Fig. 6, where

$$I = \frac{bn^3}{12} + t(d-n)^3 - (b-t)(n-t)^3 =$$

$2 \times 1.523^3 + 5(4 - 1.523)^3 - (2 \times 5)(1.523 - .5)^3$
 $= 4.35$ for each side or 8.7 for the double section. Area of double section $2(2 \times 5 + 3.5 \times 5) = 5.5$ sq. in. For the 6 ft. bay the maximum stress will equal— $m + \frac{My}{I} = -\frac{3.5}{5.5}$

+ $\frac{9 \times 2.477}{8.7} = 1.93$ tons per sq. in., and for the 9 ft. bay the maximum stress will equal $-\frac{1.2}{3.5} + \frac{12 \times 2.477}{8.7} = 3.2$ tons per sq. in. This is of course a long way within the strength of the bars, but the load may have been

much under-estimated. The 10 cwt. dead loads as taken are only equal to 5 cwt. vibrating loads, such as would be given by shafting, so that the load allowance may have to be increased; however, the above figures and formulae will enable any necessary modification to be made in the design if required.

HENRY ADAMS.

Renaissance Work around Birmingham.

BIRMINGHAM.—H. T. B. writes: "Kindly mention a few good examples of Renaissance work within twenty miles of Birmingham (excluding Aston Hall)."

It would be best to consult the secretary of the Birmingham Architectural Association (Mr. G. H. Vernon Call, 60, Newhall Street).

Fencing.

BLACKPOOL.—SUBSCRIBER writes: "There is a kind of split oak stave and galvanized twisted wire fencing. Can you supply me with the name of the manufacturer?"

The fencing to which you refer is of French design, and is manufactured by the Economic Fencing Co., Ltd., of Billiter House, Billiter Street, London, E.C. It is known as the "Peignon" fence, and is composed of cleft chestnut poles connected by galvanized

wires. It is supplied in rolls, each $5\frac{1}{2}$ yds. in length. Posts are placed at intervals of from 6 ft. to 9 ft. for the purpose of carrying it—the distance being regulated in accordance with the use for which it is intended.

F. S. I.

Projecting Octagonal Plan.

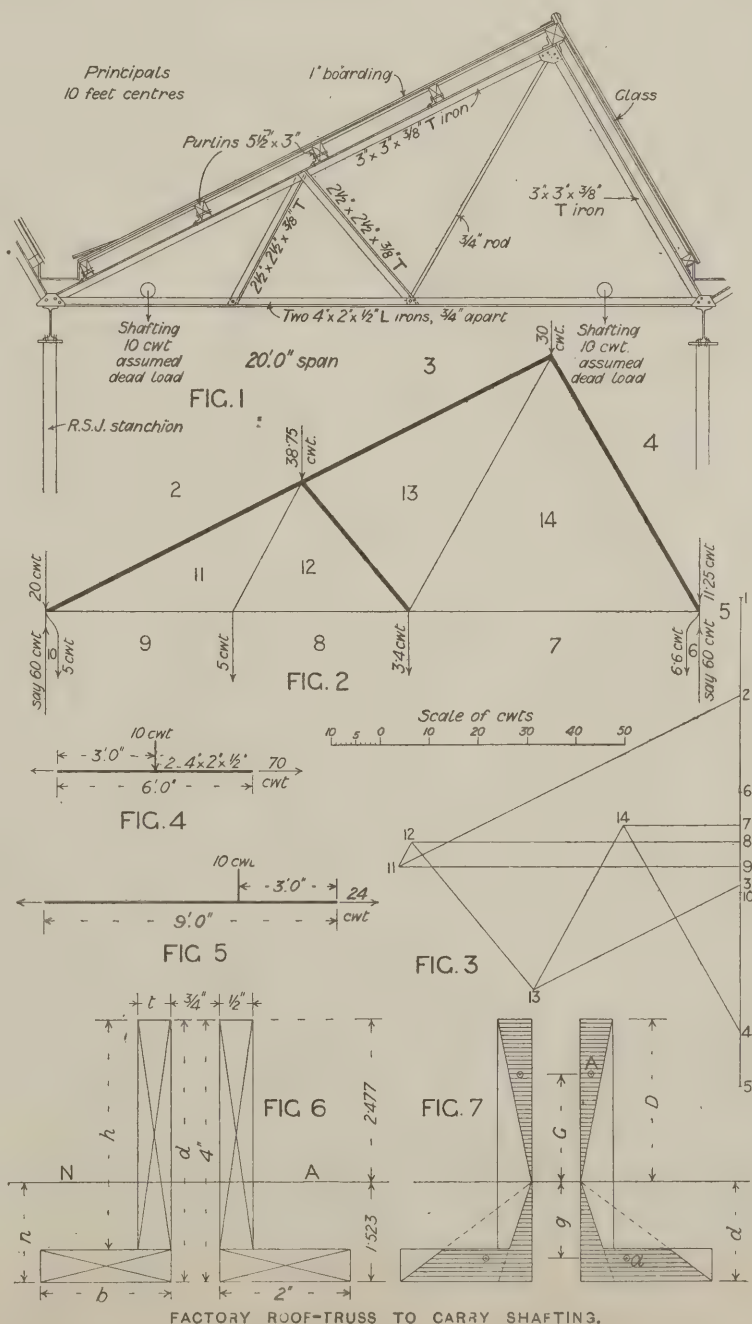
EDINBURGH.—A. S. C. writes: "I am measuring an old church which is practically octagonal on plan. When drawing down the elevation of face x y (figure not reproduced) how would you show in elevation the side faces x A and y B? Would you show x y face with the usual two or three lines indicating mouldings and stone work, and project down the faces x A and y B in single lines without indicating any stonework or mouldings?"

Yes. The face x y should be projected as usual, but the faces x A and y B might have their outlines only projected, separate and correct elevations being given of them.

G. A. T. M.

Clockwork Ventilating Fan.

LONDON.—X. writes: "I should be glad to know whether any firm supplies ventilating fans driven by clockwork, for use in places



FACTORY ROOF-TRUSS TO CARRY SHAFTING.

where other forms of power are not available."

Messrs. James Keith & Blackman Co., Ltd., do not recommend clockwork driving. They have heard of a German appliance of the kind, but, judging from their own experience, they have no confidence in its giving satisfaction.

Green Glass.

F. C. W. writes: "I am trying to get some good greenish glass for glazing 8in. by 8in. squares, but I find 'Prior's' is not made to these sizes and is rather expensive. I understand there are some American firms who make a similar glass very much cheaper. If you could let me know their names I should be glad."

The following firms may be able to supply a glass to suit you:—Messrs. Miller, Beale & Hider, 162, High Street, Camden Town, London, N.W., and James Powell & Sons, 26, Tudor Street, Whitefriars, E.C. The American glass you refer to is probably the Tiffany-Favrile glass, sold in this country by Messrs. Tiffany & Co., 221 and 221a, Regent Street, W.

HAND-PRINTED WALLPAPERS.*

By ALEXANDER ROTTMANN.

IN an age when needles are threaded by machinery at the rate of nearly one a second; when embroideries are produced by a machine process which reverses the old method in moving the cloth up to fixed needles; when soap is shaped, cut, boxed, packed into cases, nailed up, labelled and even delivered to the lighters by machinery; it seems out of date and uncommercial to print wallpapers entirely by hand. The modern wallpaper machine produces wonderful results and is able to imitate almost any fabric, tapestries, Gobelines, laces—and tries even to copy artistic stencilling in graduated tints. It manages to deceive the inartistic buyer to a large extent; in fact, there is hardly any fabric that the modern demand for sham does not expect the wallpaper machine to imitate.

But, in spite of all these so-called achievements, the modest hand-printing table which existed at the time of wigs and snuff-boxes still survives more or less in its old-fashioned simple construction. And why? Apart from the artistic superiority—I might say distinction—there are various features in the process of hand-printing that combine to maintain the demand for handwork, giving it a chance of competing successfully with the better-class machine goods.

It has often been asserted that hand-printed papers are hardly distinguishable from those produced by machine, and that for this reason it is folly to buy the more expensive kind. The general public, I agree, hardly see the difference—but, then, do they see it in lace or in embroidery? There is certainly not the difference between the two kinds of wall-papers that exists between a water-colour picture and one produced by the three-colour process, because it is after all by the aid of a mechanical contrivance that a hand-printed wallpaper is produced.

Nevertheless, a hand-printed paper is always preferred to a machine paper by the person of taste whose purse is not too slender.

Let me, then, come to the point and speak of the advantages of hand-printed paper-hangings. They are many.

(1) Machine papers can be printed in thin colours only. These colours have to be bound with gum, so that they remain and work thin and thus do not clog the rollers.

The result is a thin loose colour effect. On the other hand, the colour for a hand-printed paper is mixed with size and works in body (not thin), and the flat wood-block that takes it up from the trough felt covers the paper with solid colour without clogging the block. Now, such colour naturally covers better, and thus resists better the influence of light on the one hand and that of paste or lime-covered wall on the other, and consequently it lasts longer and looks better than the machine production. Another reason why machine papers need gum colours is the difficulty of getting metal rollers to take up size colour.

(2) In machine papers the whole of the various colours are printed at one operation. Where colours are printed on the top of each other, as in shadings, gradations, high lights, &c., they become diffused, as they are still wet. With hand-printed papers no colour touches another until dry, and so each remains pure.

(3) Large surfaces, such as big leaves, large flat flowers, broad stripes, &c., that have to be printed in one tone are never successful in machines owing to the want of solidity of colour. They may look satisfactory in the book or roll, but when pasted the colour loosens and produces a patchy surface. With hand-printed papers there is no such risk.

(4) The machine limits the variety of paper to the flat kinds supplied by the paper mills in reels. The different sorts of heavier papers, such as those with felty surfaces, heavier kinds of ingrains, silkettes and coarse textures, must be left to the hand-printing table, as not only can many of these papers not be supplied in reels (essential to machine printing) owing to bulk, but the machines would not take them. The result is that the machine, in order to replace the heavy texture grounds, tries to produce these effects in printing—a very poor substitute.

(5) Flaws, irregularities, &c., when occurring in machine goods run through many yards, owing to the necessary rapidity of printing and the difficulty of stopping the machine; whereas every block repeat of pattern in hand-printed goods is at once seen by the printer, who rectifies any defect before printing another impression, and so controls every yard.

(6) Hand-printed papers, being printed from wood-blocks (only dots and thin lines subject to injury being inserted in brass), show more softness in the printing than papers printed from machine rollers that have to be made in brass. It is true that felt and compo is used in machine rollers, but only to fill spaces between brass outlines.

(7) The preparation of getting the machine colours in position, and setting the machine ready for printing, necessitates the production of at least a ream or half-ream (500 or 250 rolls) at once; whilst the equivalent in hand-printing is 50 to 60 rolls. It often happens that the design of a machine paper is approved, whilst the colouring is unsuited to the scheme. By the hand-process, room quantities of even 10 to 15 pieces can be printed specially at an increased cost of from 15 to 20 per cent., whilst the increase in cost for such a small quantity in machine papers would send up the price to a ridiculous extent.

Having pointed out the advantages of hand-printing over machine printing, I want now to say a few words regarding the different methods of hand-printing. These may be classified as follows:—

Plain Printing.—Colour is simply transmitted from the felt to the paper in one, two or more colours, each colouring being done separately and the colour left to dry naturally.

Patching and Blending.—Two or three colours (generally two) are brushed on to the felt in different patches so as to meet the

respective parts of the block; thus the block prints two or three colours simultaneously. This kind of printing is generally applied to designs in which masses of colour are detached from one another, so that they do not run between each other. The kind of patterns used for this process are usually of the set type and not floral all-over. Let us take a modern design where the colour is built up horizontally, one row showing, say, blossoms; another, fruit. By patching such a design we could have white or pink blossoms and red fruit printed at the same time, whilst the second block would put in the leafage. Blending of colours may also be introduced into this process so that the effect of stencil gradation is produced. I want you to bear in mind, however, that although the printing is done in one operation, the preparing or laying-out of the colours on to the felt takes up almost as much time as would be required for two or three separate printings, for after each pull the brushing-in of colour on to the felt has to be repeated. On the other hand, it is an advantage to finish the printing in one instead of two or three turns.

Wash Printing.—Here the colour is made up with an excess of medium, as a wash, to give a certain amount of transparency and to make it sticky. As you pull or wrench the block off the paper it detaches itself gradually, and in doing so forms a wash pattern on the colour surfaces resembling veins of leaves, seaweedy or fernlike formations, &c., according to the proportion of medium. This process is generally used when the design shows large surfaces.

Blotting.—Having produced a wash-print, a roll of absorbing paper is passed over each fresh imprint and pressed with the palm of the hand to take off superfluous colour and give soft modified effects.

Oil printing is very seldom adopted in hand-printed work except for flocking purposes.

In conclusion I may give you a short description of a hand-printing table. There is first the wooden trough or box, which is filled with "slush," a composition made of paper pulp and gum, and covered with canvas fastened to the sides of the frame and made waterproof to prevent the "slush" from filtering through. The "slush" is worked into the centre to make the canvas covering convex (*i.e.*, "to give it a belly"), which causes the colour to spread evenly, so that every part of the block takes up the colour. There is the "jigger," a kind of solid indiarubber rope which lifts up the block from the trough and carries along an iron rod fixed in the ceiling to the printing table. The "dolly" is a kind of wooden arm which is interposed between the lever from the top bar and the block, and transmits the pressure from the treadle or foot-bar to the printing block. When I mention the racks running along the ceiling to take up the printed papers to dry (from 30 to 50 pieces at a time), you have investigated the powerful secret of this "up-to-date" appliance. There are only two persons required at the table—the printer and his tier boy; after each impression the latter brushes the colour on to the felt, which is called "tiring," and hangs up the paper on the drying racks by means of a crutch.

London Bridge.—Mr. R. Payne, architect, of Islington, writes to the "City Press" as follows:—"Now that the massive iron girders and woodwork are being removed, it is morally certain that the elevation of Rennie's noble work is ruined. Its noble features have utterly gone. Why has all this come about? Simply to widen the pavement a few feet for the benefit of those who wish to live out of London, of the railway companies over the bridge, and, of course, of the speculating builder, with his desirable new villas to let."

* A paper read at the forty-ninth meeting of the Hemlock League at the Fitzgerald Works of Messrs. Rottman & Co., Barnes, on May 27th, 1904.

Trade and Craft.

Eubœolith Flooring.

This patent flooring material can be laid on existing floors either of wood or concrete, and we need not enlarge upon the advantages which it offers in the repair of old unevenly worn floors, while being of course eminently suitable for new work. Eubœolith patent flooring can be easily kept clean and disinfected; it can be laid without joints, and rounded angles can be made to the skirting at the same time as the floor is being laid, thus avoiding joints which harbour dust and microbes, as with wooden floors or those laid with linoleum. It is therefore specially suitable for hospitals, schools, factories, offices, &c. The floor can be laid, moreover, in several colours and finished with either a rough or a polished surface. It is warm, absolutely fireproof and most agreeable to walk upon. It has been largely used abroad in several buildings for the reception of consumptive and other patients, with every satisfaction to all concerned, and in several hospitals and important buildings in this country. More than 500,000yds. of this material, in fact, are now in use. "Eubœolith" has been specified by many leading architects, and is also being largely adopted by His Majesty's Government. It has recently been laid at the new extensions to the Royal Architectural Museum in Tufon Street, Westminster, for the Architectural Association. Mr. J. Percy Day, the agent, 3, Victoria Street, Westminster, will be pleased to supply any further particulars and samples.

Portland Cement.

A neat little pamphlet has just been issued by the Saxon Portland Cement Co., Ltd., of Cambridge which contains not only a very interesting illustrated account of the firm's works and process of manufacturing Portland cement, but gives some useful facts and figures of the strength of cement, tests, &c. Their works are situated at Cherry Hinton, on the outskirts of Cambridge, and were the first in England where the dry process of cement manufacture was adopted. Briefly, we may say that the process consists in first drying the raw materials, which allows them to be ground very finely and secures a more perfectly even preliminary mechanical mixture of the ingredients. We need not go through all the means by which this is done; suffice it to say that by proper machinery and supervision (samples being continually tested at each stage of the manufacture) a homogeneous powder is produced which is all that could be desired. The mixture is then damped slightly, just sufficient to allow bricks to be pressed from it, and these bricks are placed in the kilns, which are of the continuous type. The clinker is finally ground to powder so finely that only 2 per cent. residue is left on a sieve having 5,800 meshes per square inch. The works are designed on the most up-to-date, scientific and labour-saving basis and have an output of 600 to 650 tons per week; with the result that no higher quality and more reliable brand of cement is made. Fineness of grinding, of course, is most important for tensile strength, and the tests show a tensile strain neat of 500lbs. per sq. in., or 250lbs. 3 of sand to 1 of cement in seven days. This early development of high tensile strength does not show free lime as might be thought, but is entirely due to the exact proportioning of the ingredients and the fineness of grinding. The specific gravity is 3.14. It will be remembered that the Engineering Standards Committee have decided in favour of the boiling test as giving the best guarantee of the strength of cement, and this pamphlet is remarkable for the way in which the manufacturers of Saxon

cement welcome this test, giving a description of how to perform it, for they are able to show that it remains thoroughly sound when subjected to it; whereas the majority of cements fail under the boiling test—especially the foreign cheap cements. Analyses, reports by chemists, &c., are also given, so that the pamphlet should be very useful for reference.

Coming Events.

Wednesday, June 15.

METEOROLOGICAL SOCIETY.—Rev. C. F. Box on "Effects of a Lightning Stroke at Earl's Fee, Bowers Gifford, Essex, April 13th, 1904," and Mr. Lawrence Rotch on "An Instrument for determining the True Direction and Velocity of the Wind at Sea." at 4.30 p.m.

BRITISH ARCHÆOLOGICAL ASSOCIATION.—Meeting at 8 p.m.

BUILDERS' FOREMEN AND CLERKS OF WORKS' INSTITUTION.—Ordinary Meeting of the Members at 8 p.m.

CHEMICAL SOCIETY.—Ordinary meeting at 5.30 p.m.

Thursday, June 16.

SOCIETY OF ANTIQUARIES.—Meeting at 8.30 p.m.

SOCIETY OF MINING AND METALLURGY.—Mr. W. F. Wilkinson on "Iron Ore Mining in Scandinavia," at 8 p.m.

Saturday, June 18.

EDINBURGH ARCHITECTURAL ASSOCIATION.—Visit to Donibristle. Leader. Mr. B. S. Murphy.

ARCHITECTURAL ASSOCIATION.—Visit to Penshurst.

Monday, June 20.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.—Presentation of Royal Gold Medal at 8 p.m.

Bankruptcies.

[Abbreviations: R.O.—receiving order; P.E.—public examination; C.C.—county court; O.R.—official receiver; Adj.—Adjudication.]

DURING THE WEEK ending June 10th twenty-six failures in the building and timber trades in England and Wales were gazetted.

S. BROWN, builder, Sheffield. R.O. June 8th.

J. P. BASTARD, builder, Norton. R.O. May 30th.

F. COOPER, builder, York. Liabilities £2,177; assets £736; deficiency £1,441.

J. WILLIAMS, builder, Newport, Mon. Liabilities £2,721; assets £5; deficiency £2,716.

J. PARK, builder, Uddingston, Glasgow. Liabilities £14,682; assets £16,110; apparent surplus £1,428.

R. W. BYOTT, builder, Hoddesdon, P.E., Shirehall Hereford, July 6th, at 12.15.

G. COLLIER, painter and decorator, Great Grimsby. R.O. May 31st.

R. JOHNSON, plumber and ironmonger, Morpeth. R.O. June 3rd.

MOORE & SONS, surveyors, estate agents, builders and decorators. Adj. June 3rd.

W. PRITCHARD, carpenter and builder, Lye. P.E., Stourbridge C.C., June 15th, at 1.30.

R. J. BLAKE & Co., timber merchants, Ilford. P.E., London Bankruptcy Court, June 15th, at 11.30.

STICKLAND & BLAKEMAN, builders and decorators, Hampton, Middlesex. R.O. June 2nd.

T. MARTIN & SONS, brick manufacturers, Bentley. First meeting, O.R.'s, Wolverhampton, June 15th, at 11.30.

P.E., Walsall C.C., June 23rd, at 11.30.

J. T. EVANS, builder, Crynant. R.O. May 30th. First meeting, O.R.'s, Swansea, June 16th, at 12. P.E., Neath Town Hall, July 5th, at 11.30.

M. T. DEVILLE, steel and rail merchant, Sheffield. First meeting, O.R.'s, Sheffield, June 15th, at 12. P.E., Sheffield C.C., June 23rd, at 2.

J. GREEN, builder, Darlington. First meeting, O.R.'s, Middlesbrough, June 15th, at 3. P.E., Stockton-on-Tees, C.C., June 15th, at 10.45.

H. B. LOWE, engineer, Bristol. R.O. June 1st. First meeting, O.R.'s, Bristol, June 15th, at 11.45. P.E., Guildhall, Bristol, July 22nd, at 12.

S. W. BUSTON, builder's merchant, Willesden. R.O. May 31st. First meeting, London Bankruptcy Court, June 17th, at 1. P.E., same, July 13th, at 11.30.

CURTIS & WEAVER, builders, Beckenham. First meeting, 24, Railway Approach, London Bridge, June 16th, at 11.30. P.E., Croydon C.C., July 13th, at 11.

S. FINDLEY, builder, Newton-le-Willows. First meeting, O.R.'s, Manchester, June 15th, at 2.30. P.E., Warrington C.C., July 1st, at 11.

H. LOCKWOOD & Co., asphalters and contractors, Manchester. R.O. May 18th. First meeting, O.R.'s, Manchester, June 15th, at 3.30. P.E., Manchester C.C., June 27th, at 10.

Obituary.

Mr. T. W. Pettifor, a well-known Leicester architect, died on June 8th.

The late Mr. W. A. Royle, F.R.I.B.A., of the firm of Messrs. Royle & Bennett, architects and surveyors, Manchester, left estate of the gross value of £4,254.

Current Market Prices.

FORAGE.

		£	s.	d.	£	s.	d.
Beans	per qr.	1	14	0	2	0	0
Clover, best	per load	4	0	0	4	7	6
Hay, good	do.	3	12	6	4	0	0
Sainfoin mixture	do.	3	12	6	4	2	6
Straw	do.	1	12	0	2	2	0

OILS AND PAINTS.

Castor Oil, French	per cwt.	1	0	5	—	—	—
Colza Oil, English	do.	1	2	3	—	—	—
Copperas	per ton	2	0	0	—	—	—
Lard Oil	per cwt.	2	15	0	2	17	0
Lead, white, ground, carbamate	do.	1	4	10	—	—	—
Do. red	do.	1	0	4	—	—	—
Linseed Oil, barrels	do.	0	16	3	—	—	—
Petroleum, American	per gal.	0	0	5	0	0	6
Do. Russian	do.	0	0	4	0	0	5
Pitch	per barrel	0	8	0	—	—	—
Shellac, orange	per cwt.	10	15	0	—	—	—
Soda, crystals	per ton	3	2	6	3	5	0
Tallow, Town	per cwt.	1	2	0	—	—	—
Tar, Stockholm	per barrel	1	1	6	—	—	—
Turpentine	per cwt.	2	1	6	—	—	—

METALS.

Copper, sheet, strong	per ton	72	0	0	—	—	—
Iron, Staffs, bar	do.	6	0	0	8	0	0
Do. Galvanised Corrugated sheet	do.	10	5	0	10	7	6
Lead, pig, Soft Foreign	do.	11	12	6	—	—	—
Do. do. English common brands	do.	11	17	6	12	0	0
Do. sheet English 3lb. per sq. ft. and upwards	do.	14	0	0	—	—	—
Do. pipe	do.	15	0	0	—	—	—
Nails, cut clasp, 3in. to 6in.	do.	9	5	0	—	—	—
Do. floor brads	do.	9	0	0	—	—	—
Steel, Staffs, Girders and Angles	do.	5	5	0	6	5	0
Do. do. Mild bars	do.	6	0	0	6	5	0
Tin, Foreign	do.	120	17	6	121	7	6
Do. English ingots	do.	123	0	0	124	0	0
Zinc, sheets, Silesian	do.	24	10	0	—	—	—
Do. do. Vieille Montaigne	do.	25	0	0	—	—	—
Do. Spelter	do.	21	15	0	22	0	0

TIMBER.

SOFT WOODS.

Fir, Dantzic and Memel	per load	1	13	0	3	0	0
Pine, Quebec, Yellow	do.	5	5	0	6	5	0
Do. Pitch	do.	2	5	0	3	0	0
Laths, log, Dantzic	per fath.	4	10	0	5	10	0
Do. Norrköping	per bundle	0	0	7	3	—	—
Deals, Nordmaling & Bure, Yellow, 1st, 3x7	per std.	10	5	0	—	—	—
Do. Nordmaling, Yellow, 1st & 2nd, 3x9	do.	14	10	0	14	15	0
Do. do. 3rd, 3x9	do.	12	10	0	12	15	0
Do. St. Petersburg, Yell., 1st, 3x11	do.	9	15	0	14	5	0
Do. Gulf Port Pitch Pine, 4x12	do.	10	5	0	—	—	—
Do. Archangel, Larchwood, Unsorted, 4x11	do.	10	10	0	—	—	—
Do. do. 4x9	do.	11	0	0	—	—	—
Do. do. 3x11	do.	10	15	0	—	—	—
Do. do. 3x9	do.	10	5	0	10	10	0
Do. do. 3x8	do.	9	0	0	—	—	—
Do. do. 3x7	do.	8	10	0	—	—	—
Do. do. White, 2nd, 3x9	do.	9	10	0	—	—	—
Do. do. Yellow, 2nd, 3x9	do.	15	0	0	15	5	0
Do. Sandarne, Yellow, 4th, 4x9	do.	11	15	0	12	0	0
Do. do. 5th, 4x9	do.	8	0	0	8	5	0
Do. Mesane White, 1st, 3x11	do.	13	10	0	—	—	—
Do. do. 3x9	do.	12	5	0	—	—	—
Do. Ljusne, Yellow, 5th, 4x11	do.	10	5	0	10	10	0
Do. Norrköping, Yell. & White, Unsorted, 3x7	do.	7	5	0	—	—	—
Do. Montreal, Red Pine, 1st, 4x11	do.	15	15	0	16	5	0
Do. Quebec, Spruce, Unsorted, 3x9x12ft. and 13ft.	do.	8	10	0	8	15	0
Battens, all kinds	do.	6	5	0	12	5	0
Scantlings	do.	6	10	0	9	15	0
Flooring Boards 1in. prepared, 1st	per square	0	9	6	0	12	6
Do. 2nd	do.	0	8	6	0	9	9
Do. 3rd, &c.	do.	0	8	0	0	8	3

HARD WOODS.

Ash, Quebec	per load	3	12	6	—	—	—
Birch, Miramichi, Planks, 3x5 to 16in.	per cu. ft.	0	0	11	1	—	—
Box, Turkey	per ton	15	0	0	20	0	0
Cedar, Cuba	per ft. sup.	0	0	4	—	—	—
Do. Honduras	do.	0	0	4	—	—	—
Do. Tobasco	do.	0	0	5	3	—	—
Elm, Quebec	per load	4	2	6	—	—	—
Mahogany, Average Price for Cargo, Honduras	per ft. sup.	0	0	4	3	—	—
Do. African	do.	0	0	4	3	—	—
Do. St. Domingo	do.	0	0	3	3	—	—
Do. Cuba	do.	0	0	3	0	0	3
Do. Lagos	do.	0	0	3	1	—	—
Do. Benin	do.	0	0	3	1	—	—
Do. Tobasco	do.	0	0	5	3	—	—
Oak, Libau, Crown	per load	2	15	0	—	—	—
Wainscot logs	do.	3	7	0	—	—	—
Do. Fiume round logs	do.	4	10	0	—	—	—
Do. Quebec	do.	4	10	0	—	—	—

Complete List of Contractions Open.

DATE OF DELIVERY	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
BUILDING:			
June 16	Amersham—School	Governors of Amersham Grammar School.	H. Belch, Architect, Chesham.
" 16	Aberdare—Schoolrooms	Trustees, English Wesleyan Ch. Committee, Workmen's Library	J. L. Smith & Davies, Architects, Aberdare.
" 16	Rhymney, Mon.—Library, &c.	—	J. L. Smith & Davies, Architects, Aberdare.
" 16	Ipswich—Additions to School	—	Bishopp & Cautley, 32 Museum Street, Ipswich.
" 16	Kingussie—Repairs to Bridges	—	A. Mackenzie, Engineer, Kingussie.
" 16	Pentre-Estyll—Repairs to Chapel	—	Chapel House, Pentre-Estyll.
" 16	Scarborough—Foundations, Drains, &c.	Town Council	H. W. Smith Engineer and Surveyor, Town Hall, Scarborough.
" 16	South Moor, Durham—Billiard-room	M. Martin	G. T. Wilson, 21 Durham Road, Blackhill, co. Durham.
" 16	Horninglow—Chapel	Durham Miners' Association	Rowland & Sons, 32 Union Street, Burton-on-Trent.
" 17	Wingate—Two Houses	Admiralty	F. Grant, Sec., Durham Miners' Association, North Rd., Wingate.
" 17	Speeton—Houses, &c.	—	Director of Works Department, Admiralty, 21 Northumberland Avenue, London, W.C.
" 17	South Devon—Houses, &c.	Admiralty	Superintending Civil Engineer, H.M. Dockyard, Devonport.
" 18	Stainland—Eight Houses	—	C. F. L. Horsfall & Son, Architects, Lord St. Chambers, Stainland.
" 18	Carlisle—Byre	Asylums Committee	G. A. Oliver, County Architect, Carlisle.
" 18	Basingstoke—Repairs to Wall	Burial Board	F. R. Phillips, Surveyor, Burial Board, Basingstoke.
" 18	Edinburgh—Convenience	Magistrates and Council	Borough Engineer, City Chambers, Edinburgh.
" 18	Harrogate—Bricks	Corporation	Engineer's Office, 14 Albert Street, Harrogate.
" 18	Abercrombie—Chapel	—	C. M. Davies, 112 High Street, Merthyr.
" 20	Abertillery—School	—	F. G. Wall, Penybont Stores, Cwmillery.
" 20	Dundalk—Shop, &c.	P. & T. M'Cann	J. F. M'Gahan, 3 Earl Street, Dundalk.
" 20	Gilberdiike—Alterations and Additions to School	Education Committee	Clerk of Works, Beverley.
" 20	Halifax—Playshed	Education Committee	J. Lord, Engineer, Town Hall, Halifax.
" 20	Kimbolton—House and Stable	—	Nicholson & Hartree, Architects, Hereford.
" 20	Portsmouth—Offices, &c.	Education Committee	A. H. Bone, Surveyor, Cambridge Junction, Portsmouth.
" 20	Selma, Ledaig—Church	—	G. W. Brennan, Architect, Selma, Ledaig.
" 20	Bridgefold—Tramway Offices	Corporation	S. S. Platt, Borough Surveyor, Town Hall, Rochdale.
" 20	Wordsley—Two Cottages	Kingswinford R.D.C.	W. Fiddian, Old Bank Offices, Stourbridge.
" 20	Wainsford, near Lymington—Stone Bridge	Lymington R.D.C.	J. D. Rawlins, 38 High Street, Lymington.
" 20	Rhydyllwyar, Abergavenny—Bridge	Rural District Council	J. Gill, Surveyor, 4 Brecon Road, Rhydyllwyar.
" 21	Brentford—Extensions to Market	Urban District Council	N. Parr, Engineer and Surveyor, Clifden House, Boston Road, Brentford.
" 21	Brentford—Convenience	Urban District Council	N. Parr, Engineer and Surveyor, Clifden House, Boston Road, Brentford.
" 21	Edenfield—Club	—	F. J. Hobson, Architect, Rawtenstall.
" 21	Chelsea—Alterations and Repairs to Workhouse	Guardians	Lansdell & Harrison, 66 Basinghall Street, E.C.
" 21	Islington, N.—Straw Loft	Borough Council	J. P. Barber, Town Hall, Upper Street, N.
" 21	Aspatia—Drying Store	Co-operative Society	J. Lawson, 32 King's Street, Aspatia.
" 22	Neath—Public Library	Corporation	Borough Engineer's Office, Gwyn Hall, Neath.
" 22	Taunton—Free Library	Free Library Trustees	Municipal Offices, Taunton.
" 23	Wimbledon—Enlargement of Schools	Urban District Council	R. H. S. Butterworth, Council Offices, Wimbledon, S.W.
" 24	Galway—Extension of Pier, Breakwater, &c.	County Council	H. Williams, Offices of Public Works, Dublin.
" 24	Paul—Three Houses, &c.	Admiralty	Director of Works Department, Admiralty, 21 Northumberland Avenue, W.C.
" 23	Bratton Fleming—Schoolroom	—	W. Watts, Bratton Fleming.
" 23	Ealing—Extensions to Hospital	Town Council	C. Jones, Borough Engineer, Town Hall, Ealing.
" 24	Oldbury—Police Station	Worcester Standing Joint Committee	Surveyor's Offices, Worcester Chambers, Pierpoint Street, Worcester.
" 25	Grimsby—Erection of Premises	Great Grimsby Albion Steam Fishing Co.	H. C. Scaping, Architect, Grimsby.
" 27	Ruabon—Chapel	—	J. Evans, 63 Chapel Street, Penycyae.
" 28	Ipswich—Parcel Office	Commissioners of H.M. Works, &c.	Postmaster, Ipswich
" 28	Paddington—Offices	Great Western Railway Co.	Engineer, Gt. Western Railway, Bishop's Rd. Station, Paddington.
" 28	Stepney—Additions and Alterations to Public Baths	Town Council	M. W. Jameson, 15 Great Alle Street, Whitechapel, E.
" 28	Abertillery—Alterations and Additions to Church	—	Habershon, Fawcok & Co., 41 High Street, Newport, Mon.
" 28	St. Austell—Five Cottages, &c.	—	Messrs. Christoes, Ranelagh Road, St. Austell.
" 30	Lambeth—Public Library	Borough Council	H. Wakeford & Sons, 267 Clapham Road, S.W.
" 30	Hebburn-on-Tyne—Chancel	—	Hedley School, Argyle Street, Hebburn.
July 1	Slough—Alterations and Additions to School	Council	Lee & Farr, Architects, Slough
" 1	Boscawell—Houses	Admiralty	Director of Works Department, Admiralty, 21 Northumberland Avenue, W.C.
" 1	Cliff Creek—Houses	Admiralty	Director of Works Department, Admiralty, 21 Northumberland Avenue, W.C.
" 23	Rio-de-Janeiro—Theatre	—	Commercial Intell. Branch, Board of Trade, 50 Parliament St., S.W.
ENGINEERING:			
June 17	Church Stretton—Manhole and Culvert	Urban District Council	S. G. Jones, 26 Castle Street, Shrewsbury.
" 17	Wimbledon—Boilers, &c.	Urban District Council	H. Tomlinson Lee, Chief Electrical Engineer, Wimbledon.
" 18	Bridgend—Telephone, &c., Services	Parc Gwyllt Asylums	W. E. R. Allen, Glamorgan County Council Offices, Cardiff.
" 18	Bridgend—Ironwork	Right Hon. the Earl of Dunraven	H. Martin & Son, 26 Paradise Street, Birmingham.
" 18	Cannock—Mains Extension	Rural District Council	H. M. Whitehead, Engineer's Office, Penkridge, Stafford.
" 18	Guildford—Road Roller	Rural District Council	J. Anstee, Council's Office, Commercial Road, Guildford.
" 20	Blackpool—Boiler, &c.	Sanitary Committee	J. S. Brodie, Borough Engineer, Town Hall, Blackpool.
" 20	Uppminster—Pumping Station, &c.	Romford R.D.C.	J. Simmons, Bank Chambers, Doncaster.
" 20	Ashford, Kent—Steam Road Roller	Rural District Council	H. Hamilton, Clerk, 11 Bank Street, Ashford, Kent.
" 20	West Ham—Electric Wiring	Educational Committee	W. Jacques, Architect, 2 Fen Court, Fenchurch Street, E.C.
" 20	London, E.—Electric-Light Installation	Stepney Borough Council	M. W. Jameson, 15 Great Alle Street, Whitechapel, E.
" 20	Macclesfield—Wiring and Plant	Asylums Committee	Lacey, Sillar & Leigh, 2 Queen Anne's Gate, Westminster.
" 20	Kingswinford—Sewage Pumps, &c.	Rural District Council	W. Fiddian, Engineer, Stourbridge.
" 21	Southampton—Heating	Corporation	J. A. Crowther, Borough Engineer, Southampton.
" 21	Nottingham—Reservoirs	Water Committee	S. Moore, Water Offices, St. Peter's Square, Nottingham.
" 24	Dublin—Pier Extension, &c.	County Council	County Council Offices, Dublin.
" 27	Dublin—Two Engines	Great Northern Ry. (Ireland)	T. Morrison, Secretary's Office, Amiens Street Terminus, Dublin.
" 28	Stranolar—Passenger Carriages	Donegal Railway Co.	General Manager, Donegal Railway Co., Stranolar, co. Donegal.
" 30	Bollow—Sea Wall	Commissioners of Sewers	J. R. Bennett, Chaxhill House, Chaxhill, near Westbury-on-Severn, Gloucestershire.
July 30	London, S.E.—River Wall	Lambeth Borough Council	H. Edwards, Engineer, 345 Kennington Road, S.E.
July 4	Johannesburg—Cables, &c.	Municipal Tramways & Electric Supply	Nordey & Dawbarn, 82 Victoria Street, S.W.
" 4	Bridgwater—Laying Pipes	Rural District Council	R.D.C. Offices, Bridgwater.
" 30	Shanghai, China—Electric Tramways	Municipal Council	R. Pook & Co., 63 Leadenhall Street, London, E.C.
August 1	Calcutta—Water-Meter Testing Apparatus	Corporation	Engineer to the Corporation, 2 Municipal Office Street, Calcutta.
" 15	Bangkok, Siam—Carriages, &c.	—	General Manager, Siamese Government Railways, Bangkok.
IRON AND STEEL:			
June 16	Rugby—Water Mains	Urban District Council	D. G. Macdonald, Surveyor and Waterworks Engineer, Rugby.
" 16	Heywood—Stores	Water Board	J. Diggle Water Engineer, Water Board Offices, Heywood.
" 17	St. George's-in-the-East—Steam Piping	Guardians	J. R. Brown, Guardians Offices, Raine Street, Old Gravel Lane, E.
" 20	Keighley—Pipes, &c.	Gas Committee	J. Laycock, Gas Engineer, Gas Offices, Cook Lane, Keighley.
" 20	Leeds—Stores	Gas Committee	R. H. Townsley, Gas Offices, Leeds.
" 21	Manchester—Stores	Gas Committee	C. Nickson, Gas Department, Town Hall, Manchester.
" 22	Swansea—Stores	Graigola Merthyr Co., Ltd.	Graigola Merthyr Co., Ltd., Swansea.
" 24	Nottingham—Cast-Iron Valves, Hydrants, &c.	Corporation	S. Moore, St. Peter's, Church Side, Nottingham.
July 4	Bridgwater—Pipes, &c.	Rural District Council	T. M. Reed, Clerk, R.D.C. Offices, Bridgwater.
PAINTING AND PLUMBING:			
June 16	Bristol—Oils and Colours	Guardians	J. G. Simpson, St. Peter's Hospital, Bristol.
" 16	Drogheda—Painting	Guardians	F. Dowdall, Clerk of the Union, Drogheda.
" 17	St. Albans—Painting	Hospital Committee	City Surveyor's Office, Victoria Street, St. Albans.
" 18	Padfield, Glossop—Painting, &c.	—	W. Smiths, 37 Post Street, Padfield.
" 20	Thorne, near Doncaster	Rural District Council	J. Stanley, Surveyor, Thorne.
" 20	West Ham—Painting, &c.	Educational Committee	W. Jacques, Architect, 2 Fen Court, Fenchurch Street, E.C.
" 20	Leeds—Oak Varnish, &c.	Gas Committee	R. H. Townsley, Gas Offices, Leeds.

Complete List of Contracts Open — continued.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
PAINTING AND PLUMBING—cont.			
June 20	Portsmouth—Decorative Work	Corporation	Borough Engineer, Town Hall, Portsmouth.
" 21	Swinton—Cleaning, &c.	Education Sub-Committee	S. Marshall, Divisional Clerk, Swinton Bridge Schools, Swinton.
" 21	London, E.C.—Painting, &c.	Shoreditch Borough Council	J. R. Dixon, Borough Surveyor, Town Hall, Shoreditch.
" 22	Manchester—Paints, &c.	Gas Committee	C. Nickson, Gas Department, Town Hall, Manchester.
" 23	Newport, Mon.—Painting	Guardians	Union Offices, Newport, Mon.
" 30	Wrexham—Cleaning, &c.	Education Committee	T. Bury, Clerk, Guildhall, Wrexham.
July 1	Lewes—Painting	East Sussex County Council	F. G. Wood, County Surveyor, County Hall, Lewes.
" 4	Stepney—Re-decorating	Town Council	M. W. Jameson, 15 Great Alle Street, E.
ROADS AND CARTAGE:			
June 16	Totnes, Devon—Road	Rural District Council	A. Tucker, Highway Surveyor, Hazard, Totnes.
" 16	Newhaven—Stone	Rural District Council	W. Gates, Clerk, 86 High Street, Lewes.
" 16	Norton—Whinstone	Urban District Council	W. Watson, Surveyor, Council Buildings, Norton, Malton.
" 16	Gravesend—Making-up	Town Council	Borough Surveyor's Office, Town Hall, Gravesend.
" 17	Preston, Lancs—Levelling, &c.	Corporation	Borough Surveyor, Town Hall, Preston, Lancs.
" 18	Buxton—Granite	Urban District Council	S. Taylor, Clerk to the Council, Buxton.
" 20	Ely—Granite	Urban District Council	W. McKelvie, City Surveyor's Office, Ely.
" 20	Pontypridd—Road Works	Urban District Council	P. R. A. Willoughby, Engineer and Surveyor, Pontypridd.
" 20	Spennymoor—Making-up	Urban District Council	C. R. Spencer, Surveyor, Silver Street, Spennymoor.
" 21	Great Yarmouth—Granite and Stone	Town Council	J. W. Cockhill, Borough Surveyor, Town Hall, Great Yarmouth.
" 21	London, E.C.—Paving Works	Corporation	Engineer to the Corporation, London, E.C.
" 21	London, N.—Tar Paving	Islington Borough Council	J. B. Barber, Town Hall, Upper Street, N.
" 21	London, S.E.—Kerbing, &c.	Lewisham Borough Council	Surveyor's Department, Town Hall, Catford.
" 21	Stretford—Making-up	Urban District Council	E. Worrall, Council's Surveyor, Stretford.
" 21	Dartford—Road Construction	Urban District Council	Surveyor's Office, Dartford.
" 22	Wanstead—Making-up	Urban District Council	Surveyor's Department, Council Offices, Wanstead, N.E.
" 24	Lavershulme, Lancs—Street Works	Urban District Council	J. Jepson, Surveyor, Guardian Chambers, Tiviot Dale, Stockport.
" 25	Lewes—Road Rolling	Town Council	Borough Surveyor's Office, Town Hall, Lewes.
" 25	Somerton—Hire of Rollers	Langport R.D.C.	J. J. Goode, Surveyor, District Surveyor's Office, Somerton.
July 4	Gortnasate—Roadway, &c.	Board of Public Works	District Office of Works, Londonderry.
SANITARY:			
June 16	Bristol—Sanitary Pipes	Guardians	J. J. Simpson, St. Peter's Hospital, Bristol.
" 17	Valletta, Malta—Glazed Earthenware Pipes	Public Works Department	Crown Agents for the Colonies, Whitehall Gardens, London.
" 20	Hastings—Drainage Work	Education Committee	C. A. Pigott, Architect, Saxon Chambers, London Rd., St. Leonards.
" 20	Kingswinford—Sewerage Works	Rural District Council	W. Fiddian, Engineer, Old Bank Offices, Stourbridge.
" 20	Kingswinford—Sewer Pipes	Rural District Council	W. Fiddian, Engineer, Old Bank Offices, Stourbridge.
" 20	Kimberley—Sewerage	Basford R.D.C.	S. Maylan, Engineer and Surveyor, Public Offices, Basford.
" 21	London, E.—Sewers	Engineer's Department	County Hall, Spring Gardens, S.W.
" 21	Westminster—Sewerage Work	Corporation	Works Dept., Westminster City Hall, Charing Cross Road, W.C.
" 23	Botosani, Roumania—Sewerage Works	Whitchurch Schools	Municipality of Botosani, Roumania.
" 23	Whitchurch—Drainage	Rural District Council	G. Bennett, Newbury Street, Whitchurch.
" 23	Hexham—Pipe Sewers, &c.	Highway & Sewerage Committee	J. E. Parker, Engineer, Post Office Chambers, Newcastle-on-Tyne.
" 23	Leicester—Main Sewer	Urban District Council	E. G. Mawbey, Engineer and Surveyor, Town Hall, Leicester.
" 27	Witham—Sewer	Urban District Council	W. P. Perkins, Surveyor, District Council Offices, Witham.
" 27	Clay Cross—Sewerage Works	Urban District Council	H. W. Taylor, St. Nicholas Chambers, Newcastle-on-Tyne.
" 28	Watford—Sewerage Work	Rural District Council	E. Lallez, 9 Market Street, Watford.
" 29	London, N.—Sewers	Hendon R.D.C.	J. A. Webb, Engineer to the Council, Stanmore.
TIMBER:			
June 16	Bristol—Timber	Guardians	J. J. Simpson, St. Peter's Hospital, Bristol.
" 16	Heywood—Timber	Water Board	J. Diggle, Water Engineer, Water Board Offices, Heywood.
" 18	Manchester—Timber	Electricity Committee	F. E. Hughes, Electricity Department, Town Hall, Manchester.
" 22	Manchester—Timber	Gas Committee	C. Nickson, Gas Department, Town Hall, Manchester.
" 22	Swansea—Timber	Graigola Merthyr Co., Ltd	Graigola Merthyr Co., Ltd., Swansea.

List of Competitions Open.

DATE OF DELIVERY.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	DEPOSIT REQUIRED FOR CONDITIONS, &c.	FROM WHOM PARTICULARS MAY BE OBTAINED.
June 30	Peterborough—Library	£50, £25, £15.	£1	W. Mellows, Town Clerk, Peterborough.
July 2	Bury St. Edmunds—Alterations to Shire Hall	£50 £30, £20.	£1	A. A. Hunt, County Architect, Sudbury, Suffolk.
" 30	Aberystwyth—Public Library	£30, £15.	£1 1s.	A. J. Hughes, Town Clerk, Aberystwyth.
" 31	Grantham—Church	—	—	Rev. H. H. Surgey, Wyville House, Dudley Road, Grantham.
Aug. 15	Whitehaven—Public Library	£30 and £20.	£1 1s.	T. Brown, Town Clerk, Town Hall, Whitehaven.

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ADVERTISER, with previous engagements as Architect's Assistant, Railway Contractor's Cashier, and Building Contractor's Agent, seeks engagement in any similar capacity. Good references.—C. T. C., 17, Marlston Avenue, Ford, Devonport. 452

ARCHITECT and SURVEYOR'S EXPERIENCED ASSISTANT, age 25, over nine years in good offices, desires **ENGAGEMENT**. Thorough good all-round man. Excellent testimonials.—Uno., The Close, Grassmoor, Chesterfield. 416

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ARCHITECT'S JUNIOR ASSISTANT, 21, desires engagement; 4 years' experience, accurate draughtsman; Elementary and Advanced Construction certificates, South Kensington; moderate salary.—ASSISTANT, 34, Wingate Road, Hammersmith, W. 431

BRICKLAYER, good, well up in fire work, range-setting or outside work, wants permanency. Good references.—E. WILLIAMS, 2, Kempson Road, Fulham, S.W. 421

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ENGINEER - SURVEYOR, Advertiser (French) seeks appointment as above. Good Home and Foreign experience in Mechanical and Constructional work, able to prepare details, plans, surveys, levels, &c. (Home or Abroad).—Apply, J. G., 17, Cathcart Hill, Highgate. 438

FULLY QUALIFIED CLERK OF WORKS open for **ENGAGEMENT**. Thorough knowledge of every branch of Building Trade, Drainage, Sanitation, Plans, Details, Materials. Used to large works. Good testimonials and references.—Box 408, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

GENERAL FOREMAN seeks **ENGAGEMENT**. New or alteration works. Practical and energetic. Good manager. Carpenter and joiner. Abstainer. Long references.—ELLISON, Homestead, Cromwell Road, Hounslow, Middlesex. 414

GENERAL FOREMAN seeks engagement; just finished; 11 years' good reference last employer, done good work and large jobs. Carpenter, 32 (abstainer).—G. E., 86, Park Road, Baker St., N.W. 429

HOT WATER FITTER requires situation, good references, can take charge of work.—T. S., 70, Gordon Road, Ilford. 454

PAPERHANGER (first-class), just disengaged after five years' job, requires **WORK**. Piece preferred, but willing to fill up time.—A. G. F., 2, Liebert Villas, Westcombe Hill, Blackheath, S.E. 428

PLUMBER, GAS and HOT-WATER FITTER, also zinc work; suit builder or jobbing shop. London and country experience.—E. G., 76, Wharton Road, Shepherd's Bush, W. 432

PLUMBER seeks **WORK**. Distance no object. Indentures to show if required. Rate of wage 10d.—R. G. SMITH, 30, Forest Rise, Walthamstow. 451

SENIOR ASSISTANT (30), now **DISENGAGED**, able Designer of considerable experience in competition and general work. Would take charge. Salary, £3 10s. Excellent references.—Box 442, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

SHOP FOREMAN of Joiners and Machines, 15 years with last employer, good references and reason given for being out.—A. G. COOPER, Rose Cottage, St. John's Road, Ipswich. 435

STUDENT, R.I.B.A., age 21, with 5½ years' good Yorkshire experience, wishes for situation in London Office either as **IMPROVER** or **JUNIOR**. Highest references, drawings, &c.—Apply Messrs. W. and D. THORNTON, Architects, Wakefield. 458

TIMEKEEPER, &c. Young man (26), with builder or contractor. Holds two "Sanitary" also "Building Construction" certificates. Nine years' experience as clerk. Salary arranged.—W. S., 162, Leighton Road, Brecknock Road, N.W. 456

TO LARGE EMPLOYERS OF LABOUR. THE NATIONAL ASSOCIATION for RESERVE SOLDIERS, 119, Victoria Street, S.W., tel. 367, Westminster, telegrams, "Employsons," London, supplies men of good character only, as Porters, Labourers, Caretakers, Carmen, Night Watchmen, Timekeepers, Carpenters, Masons, Bricklayers, Navvies, Handy Men, &c. Characters up to date. No fees.—Apply SECRETARY, as above.

TRACER and COLOURIST. Berth wanted in an Architect's office, 2 years' experience, age 19, moderate salary.—M. W., "Bilbrough," Windsor Road, Doncaster. 449

WORKING FOREMAN of **CARPENTERS and JOINERS**, thoroughly practical in all kinds of household repairs and alterations. Abstainer, good timekeeper. Country preferred.—A., 90, Replingham Road, Southfields, S.W. 422

YARD FOREMAN and TIMEKEEPER seeks re-engagement in Contractor's or Builder's yard, used to all building materials and plant; distance no object.—ABSTAINER, 60A, Dalston Lane, N.E. 441

Appointments Vacant.

CITY OF HULL.

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Canvassing directly or indirectly will be a disqualification.

Applications, in candidates' own handwriting, endorsed "Property Foreman," are to be addressed to the undersigned and delivered before the 20th JUNE, 1904.

By order,

A. E. WHITE, M.Inst.C.E.,

Town Hall, Hull,

City Engineer.

6th June, 1904.

BUILDING SURVEYOR WANTED immediately (temporary engagement of about three months) in Architect's and Surveyor's office within 20 miles of London, to measure up school buildings and value work; good knowledge of building materials requisite.—Full particulars and salary required to H. C. C., 41, Parliament Street, Westminster, London, S.W.

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JUNIOR DRAUGHTSMAN WANTED in large Engineering Works, N.W. London; building department. Knowledge of engineering useful.—Apply by letter stating age, experience and salary required, to Box 444, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

NORTHAMPTON INSTITUTE, St. John Street Road, London, E.C.—The Governing Body invite applications for the appointment of **DRAWING OFFICE ASSISTANT** (Building Trades) one evening per week, for the Session 1904-5. Further particulars and forms of application, which should be returned not later than Saturday, June 12th, 1904, can be obtained on application by letter to R. MULLINEUX WALMSLEY, Principal.

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- 448.—ARCHITECT'S GENERAL ASSISTANT, age 34, 17 yrs. varied ex., wkg. drawings, specifications, details, &c., good refs.
- 449.—TRACER AND COLOURIST, age 19, 2 yrs. arch. ex., mod. s.
- 450.—CARPENTER AND JOINER, age 21, improver, inside or out, good refs.
- 451.—PLUMBER, indentures can be shown, wages 10d.
- 452.—ARCHITECT OR BUILDER'S ASSISTANT, good refs., varied ex.
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- 454.—HOT WATER FITTER, can take charge, good refs.
- 455.—ARCHITECT'S ASSISTANT, 7 yrs. provincial ex., ex. refs., mod. s.
- 456.—TIMEKEEPER, &c., age 26, two sanitary and two building construction certificates, 9 yrs. ex. as clerk.
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See p. xxii for the Employment Register.

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The author of the design placed first in order of merit will be employed as Architect for the Library upon the usual terms of professional remuneration, viz., 5 per cent. on the cost of the executed work. The author of the design placed second will receive a premium of £30, and the third £20.

Conditions of Competition and Schedule of accommodation can be obtained on application to the undersigned on the payment of one guinea, which will be returned on the receipt of a bona fide design.

All enquiries in respect of the competition to be addressed to the undersigned on or before the 1st JULY, 1904, and designs lodged not later than 15th August, 1904.

By order,
Town Hall, THOMAS BROWN,
Whitehaven, June 8th, 1904. Town Clerk.

Contracts Open.

E.  R.

WAR DEPARTMENT CONTRACT at the YORK INFANTRY BARRACKS.

NOTICE TO BUILDERS.

TENDERS are required for the External and Internal Painting, &c., and Works in connection therewith, at the Infantry Barracks, York.

Parties desiring to tender must leave their names at the Royal Engineer Office, Fishergate, York, on or before MONDAY, the 20th inst., and pay the sum of Ten Shillings (10s.) for the bill of quantities which, with the form of tender, will be issued to each person applying.

E. H. BETHELL, Colonel,
Commanding Royal Engineers,
York Sub-District.

June, 1904.

METROPOLITAN BOROUGH OF SHOREDITCH.

The Shoreditch Borough Council invite TENDERS for PAINTING and DECORATING Shoreditch Town Hall, Old Street, E.C.

A copy of the specification with form of Tender attached may be obtained from the Borough Surveyor, Mr. J. RUSH DIXON, A.M.I.C.E., upon depositing the sum of one guinea, which sum will be returned upon receipt of a bona fide Tender after acceptance of a Tender by the Council.

An approved surety must be given to enter into a bond of £500 as security for the Contract.

Trades Union rates of wages and hours must be observed throughout.

Sealed Tenders upon the official form endorsed "Tender for Painting and Decorating Shoreditch Town Hall," must be delivered at my office by NOON on TUESDAY, JUNE 21st, 1904.

The lowest or any Tender will not necessarily be accepted.

By Order,
H. MANSFIELD ROBINSON,
Town Hall, Old Street, E.C. Town Clerk.
June 1st, 1904.

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Tenders.

Information from accredited sources should be sent to "The Editor" at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Addressed postcards on which lists of tenders may be stated will be sent post free on application to the Manager, BUILDERS' JOURNAL, 6, Great New Street, Fetter Lane, E.C.

Aldershot.—For the erection of a residence at Aldershot, for Mr. P. G. Mills. Messrs. Friend & Lloyd, architects, Aldershot:—

G. Kemp	£1,489
F. Knight	1,455
E. C. Hughes, Wokingham	1,380
S. W. Gibbs	1,295
W. L. Edgoose	1,192
Tompsett & Co.,* Farnham	1,103

* Accepted. [Rest of Aldershot]

Ballyclough (Mallow, Ireland).—For the erection of a dispensary residence at Ballyclough, for the Guardians:—

C. Kelleter, Glanworth	£1,148 0 0
P. Keefie, Mallow	1,119 10 0
P. Murphy,* John Street, Cork	1,090 0 0

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Bristol.—For the erection of first section of All Saints' Church, Fishponds. Messrs. Lingen, Barker & Son, architects, 9, Clare Street, Bristol:—

W. Hopkins	£4,300
A. S. Ingleton	4,186

H. A. Forse & Son	£4,158
A. E. Denby & Co.	4,109
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E. Love	3,310
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E. Clark,* Bristol	3,113
S. H. Eastwood	2,993

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Ferryhill (Durham).—For rebuilding the "Black Bull" inn. Mr. Stephen Wilkinson, architect, 30, Mosley Street, Newcastle-on-Tyne:—

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Draper & Son	1,450 0 0
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Howe,* West Hartlepool	1,400 0 0

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Percy & Noble, Haxby	
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J. R. Pulleyn,* Earswick	

* Accepted. [Rest of York.]

Hitchin.—For the erection of a block of three shop premises in Brand Street, for Mrs. Robert Hood Baker. Mr. Walter Graves, architect, Winchester House, E.C. Quantities by Messrs. Henry Gritten & Son, Westminster, S.W.:—

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F. Newton	1,097 0 0
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Ipswich.—For alterations and additions to laundry at St. John's Home, Ipswich, for the Board of Guardians of the Ipswich Union. Mr. Henry J. Wright, M.S.A., architect, 4, Museum Street, Ipswich. Quantities by the architect:—

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J. C. Smith	1,057
H. J. Linzell	1,057
Cubitt & Gotts	1,905
T. Parkington & Son	1,000
G. Grimwood & Sons*	997

[All of Ipswich.]

Ipswich.—For the erection of shop and premises. Mr. Raymond C. Winch, architect:—

F. Bennett	£1,360
Linzell	1,337
Cubitt & Gotts	1,305
Bloomfield	1,295
A. Sadler,* 61, Richmond Road, Ipswich	1,290

* Accepted.

London, N.—For the erection of chancel, lady chapel, organ-chamber and west porches at St. Peter's Church, Hornsey, N. Messrs. James Brooks, Son & Godsell, architects, 35, Wellington Street, Strand, W.C.:—

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(Continued on p. xx.)

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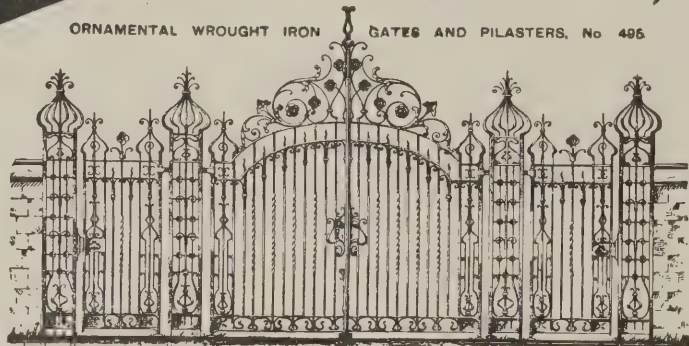
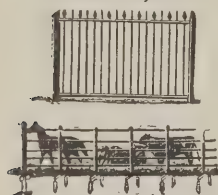
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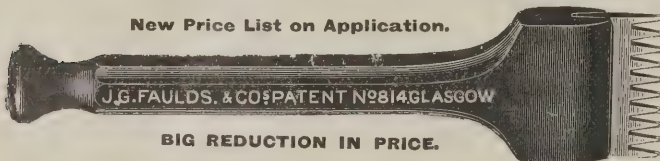
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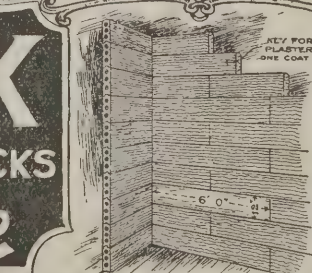
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Cold Storage.	Iron and Steel Work.
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Earthwork.	Pumps.
Electricity and Electrical Engineering.	Roads.
Engineering.	Sanitation.
Harbours.	Tunnelling.

The complete lists are published from time to time in the Builders' Journal, and the issue containing any one of them will be sent post free for 2d., or the 3 for 7d.

Students and all intending purchasers of Technical Books will find these Lists of great assistance in selecting text books, &c., as they are compiled by practical men from the complete catalogues of Technical Publishers, and give, in a handy form, a reliable book on every subject connected with Architecture and the Building Trades.

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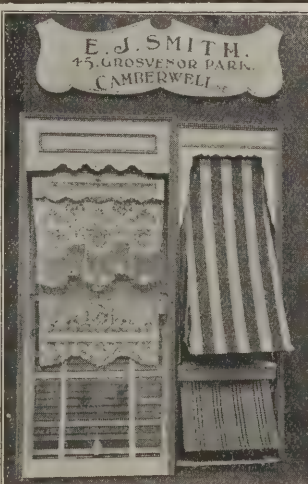
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That readers appreciate our efforts to make THE BUILDERS' JOURNAL a useful and interesting publication is apparent from the new subscriptions received each week, and the hearty encouragement we get from old subscribers. One wrote this week:—

"May 31st, 1904.

"I am an old subscriber to 'The Builders' Journal' and also to Specification, from their first publication, and I think they are the most racy and interesting books upon the varied subjects treated therein I have ever come across."

F. A., Architect and Quantity Surveyor."

We like to receive such letters as these because they prove that we are on the right lines, and that practical men find what they want in our publications.

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TENDERS—cont. from p. xviii.

London, N.W.—For the erection of a warehouse, Kimberley Road, Willesden Lane, N.W., for Messrs. Lawrence & Aitken. Mr. J. Bruce Meeson, architect, 76, High Road Kilburn, N.W. Quantities by Mr. W. Prows Broad, A.S.A., 3, Cromwell Grove, West Kensington Park, W.:—

Grover	£3 637
Pearson	3,599
W. King & Son	3,526
Godson & Son	3,515
A. Webber	3,479
Wisdom Brothers	3,300
W. Nash	3,289
Midland & Richardson	3,260
G. Neal	3,227
R. J. World	3,105
Perry Brothers	3,087
Ford & Walton	2,979
Braid, Pater & Co., Ltd.*	2,970

* Accepted.

London, W.C.—For rebuilding No. 16, Ormond Yard, Queen's Square, W.C., for Mr. W. C. Gidden. Mr. T. Wilson, architect, 34, New Bridge Street, E.C.:—

Williams	£1,700
Patman & Fotheringham, Ltd.	1,473
C. Wall & Co., Ltd.	1,337
Lidstone	1,282
Coleman & Co.	1,256
Leslie & Co., Ltd.†	1,234
J. Chessum & Sons*	1,195

* Accepted.

† Too late.

London, N.E.—For the erection of casual wards at their Waterloo Road Workhouse, Bishop's Road, Victoria Park, N.E., for the Bethnal Green Board of Guardians. Mr. W. A. Finch, architect, 76, Finsbury Pavement, E.C.:—

Wellerman Brothers	£7,163	0	0
A. Porter	6,091	0	0
R. A. Lowe	5,939	0	0
F. G. Minter	5,987	0	0
A. Reason	5,947	0	0
Whitehead & Co., Ltd.	5,892	0	0
F. Willmott	5,793	0	0
C. Dearing & Son	5,781	0	0
Leslie & Co.	5,697	0	0
H. Lovatt	5,650	0	0
F. & T. Thorne	5,647	0	0
S. E. Moss & Co.	5,601	0	0
J. Appleby & Sons	5,590	0	0
W. Lawrence & Co.	5,487	0	0
H. Kent	5,420	0	0
J. Ferguson & Co.	5,397	18	7
Foster Brothers	5,231	0	0

Newton Abbot (Devon).—For building in cement concrete a double culvert arch about 475ft. long, a single culvert about 215ft. long, and other works in connection therewith, for the Newton Abbot Urban District Council. Mr. John Chudleigh, architect, Newton Abbot:—

Shaddock, Plymouth	£4,383	11	7
Harris, Clyst Hydon	4,165	0	0
Pike, Torquay	3,757	0	0
Dixon, Dunsford	3,621	0	0
No signatore, Brenten, Plymouth	3,442	0	0
F. Parker, Newton Abbot	3,075	0	0
Duke, Plymouth	3,001	0	0
F. Stacey, Newton Abbot	2,950	0	0
Lanz, Liskeard	2,737	0	0
Doney, Plymouth	2,632	14	6
F. Zealley,* Newton Abbot	2,360	0	0

* Accepted.

Southampton.—For the erection of a wharf front, &c., at Woolston. Mr. E. Cooper Poole, A.M.I.C.E., 5, Portland Street, Southampton:—

Osman	£1,387
Playfair & Toole	1,380
Grace	1,097
Douglas & Richards	1,095
Daysh,* Southampton	1,049

* Accepted.

Seven Kings, Ilford.—For the erection of Seven Kings U.M.F. Church and School. Messrs. George Baines, F.R.I.B.A., and R. Palmer Baines, architects, 5, Clement's Inn, Strand, London, W.C.:—

A.		B.	
H. J. Carter	£3,541	£564	0 0†
James W. Jerram	3,536	677	0 0
F. Gough & Co.	3,400	664	0 0
Frank Bull	3,297	574	0 0
G. J. Hosking	3,223	557	0 0
S. J. Scott	3,212	556	0 0
Sands, Palmer & Co.	3,117	602	2 0
F. J. Coxhead	3,112	592	0 0
Turtle & Appleton	3,130	525	0 0
Battle, Sons & Holness	3,097	528	0 0
F. & A. Willmott	2,994	511	0 0

Charles North,* Grove Works, Manbey Park

Stratford 2,922 .. 521 0 0

[Architects' estimate £3,641.]

* Accepted. † Plus £150 for seating.

Sunbury-on-Thames.—For the erection of a congregational church at Sunbury-on-Thames. Messrs. H. F. & H. R. Coales, architects, Sunbury. Quantities by architects:—

Knight & Sons	£1,398	10	0
T. & S. Fisk	1,392	4	0
Wheatley & Sons	1,375	0	0
E. Chamberlain	1,350	0	0
Lock Brothers	1,311	5	0

R. T. Hughes & Co., Ltd.	£1,270	0	0
W. H. Gaze & Sons	1,239	0	0
W. Waite*	1,208	18	7
E. Potterton†	1,182	6	0

* Accepted.

† Withdrawn.

Taunton. For alterations and additions to the municipal offices. Mr. James H. Smith, borough surveyor:—

Potter	£2,239
Pollard	2,200
Manning	2,023
Mogridge*	1,836

* Accepted. [Surveyor's estimate, £2,050.]

Woodford Green (Essex).—For alterations and additions to building at corner of High Road and Manor Road, Woodford Green, to form men's and youth's club for Mr. J. R. Roberts. Mr. A. W. Hudson, architect, 87, Finsbury Pavement, E.C.:—

T. Osborn & Sons	£1,986
J. S. Hammond & Son	1,931
C. Vigor & Co.	1,888
C. S. Foster & Sons	1,850
S. J. Scott	1,760
F. J. Coxhead*	1,637

* Accepted.

Woodford Green (Essex).—For the erection of a new post-office at Woodford Green, for the Commissioners of H.M. Works and Public Buildings:—

S. Kind	£3,550	0	0
E. Stevenson & Sons	3,520	0	0
General Builders, Ltd.	3,497	0	0
G. J. Hosking	3,447	0	0
B. E. Nightingale	3,181	0	0
Speechley & Smith	3,130	0	0
E. Brown & Son	3,129	10	0
E. D. Pearay	3,050	0	0
C. Ansell	3,030	0	0
J. Shelbourne & Co.	2,982	0	0
C. S. Foster & Son	2,975	0	0
T. Osborne & Sons	2,974	0	0
T. Bruty	2,960	0	0
F. & A. Willmott	2,938	0	9
L. Whitehead & Co., Ltd.	2,930	0	0
Rowley Brothers	2,900	0	0
A. W. Nash	2,898	0	0
Foster Brothers	2,859	0	0
F. Banyard	2,720	0	0

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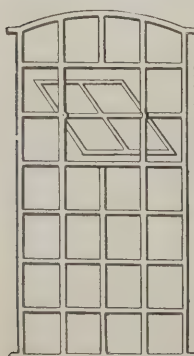
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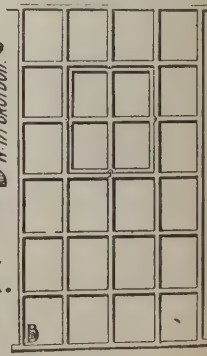
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THE

BUILDERS' JOURNAL

AND ARCHITECTURAL RECORD.

June 22, 1904. Vol. 19, No. 489.

6, Great New Street, Fetter Lane, E.C.

SUB-CONTRACTS.

The New Form issued by the Institute of Builders.

THE following is the new form of sub-contract for building work just issued by the Institute of Builders, 31 and 32, Bedford Street, Strand, W.C. (from whom copies may be obtained, price 6d. each):—

An agreement made the _____ day of _____, 19____, between (hereinafter called the contractors) of the one part, and (hereinafter called the sub-contractor) of the other part.

The contractors have entered into the contract mentioned in the first schedule hereto which, with the specification, drawings and conditions, is hereinafter included in the expression the principal contract.

It has been agreed between the parties hereto that the sub-contractor shall execute and supply for the buildings and work to be executed under the principal contract the work and materials specified in the second schedule hereto, upon and subject to the terms and condition hereinafter contained.

Now it is hereby agreed as follows:—

1. The sub-contractor will do and perform all the obligations imposed upon or undertaken by the contractors under the principal contract in respect of the work and materials referred to in the said second schedule hereto to the satisfaction of the contractors and of the architect under the principal contract—hereinafter referred to as the architect—and in such manner as the contractors shall direct or require.

2. The sub-contractor having full knowledge of the terms, stipulations and conditions of the principal contract agrees to abide by, perform and keep the same so far as they are applicable to the subject-matter of this contract as fully as if the same had been herein set forth at length, and as if he were the contractors under such contract, and in particular will remove or make good any defects or defective work or materials which the architect or the contractors may require to have removed, remedied or made good at any time during the progress of the works or within the period named in the principal contract as the period of maintenance, and in the event of the sub-contractor becoming bankrupt or committing any act of bankruptcy, the contractors are to have the same and the like powers over the plant, chattels, materials and property of the sub-contractor, on the site, as are given to the employers over the contractors and their plant and materials, in and by the principal contract in such an event.

3. The sub-contractor will complete and deliver up the works and the respective sections thereof to be executed under this contract at the time or within the respective times specified in the first column of the third schedule hereto, and in case of default—unless such default shall be attributable to strike or lock-out of the sub-contractor's workmen or other cause which the contractors or, in case of their refusal, the architect shall consider such as to entitle the contractors to an extension of time under the principal contract—will pay to the contractors the

amount mentioned in the second column of the third schedule as liquidated and agreed damages which the contractors are hereby authorized to deduct from any moneys due or to become payable under this contract. It is expressly agreed that the respective amounts mentioned in such schedule are severally applicable to the respective portions of work against which they are set, so that two or more or all of them may run and be payable concurrently.

4. The contractors are to be entitled to determine this contract in the event of the works not progressing to their reasonable satisfaction, or the goods or any part thereof not being delivered within the time or respective times stated in the third schedule, and default being made by the sub-contractor in complying with a written notice from the contractors to proceed with the works or deliver the goods, as the case may be, for a period named in such notice not being less than three working days. In the event of the contract being determined under this clause an account shall be taken of the amount due for work executed or materials delivered and of the damages or increased cost caused to either party by delay or breach of contract, and the balance due either to or from the contractors shall be ascertained and paid accordingly. In case of difference the amount shall be a matter for arbitration under clause 14, and the decision of the arbitrator shall be final.

5. The contractors shall provide at their own expense all water required by the sub-contractor for the purposes of this contract, and the sub-contractor shall have the use, in common with the workmen of the contractors and of other sub-contractors, of existing scaffolding only. The sub-contractor shall, however, satisfy himself that any scaffolding used for the purpose of this contract is fit and proper for his purpose, and shall be solely responsible for any accidents which may result from the user of such scaffolding or plant by himself or men in his employ, and shall make good any damage to scaffolding or plant belonging to the contractors, or any portion of the work in course of execution, done or caused by any act, neglect or default of himself or of any men in his employ.

6. The sub-contractor will provide at his own expense any temporary workshops, sheds or messrooms required for his workmen, at such places on the site as the contractors may appoint, and also provide any fuel, light and watching required for his work.

7. All works executed and goods delivered under this contract shall be executed and made to the satisfaction of the contractors and of the architect. No variations shall be made unless authorized by the contractors in writing. The amount payable or to be allowed in respect of all authorized variations which may be made in the works or goods the subject of this contract, is unless otherwise agreed between the parties, to be adjusted under the provisions of the principal contract.

8. The price to be paid to the sub-contractor shall be the price named or to be ascertained in the manner provided in the fifth schedule, and payments shall be made by the contractors to the sub-contractor as the work proceeds at the rate and by the

instalments mentioned in such schedule (but so that no payment shall become due to the sub-contractor under this contract unless and until the architect shall have included in a certificate an amount in respect of the works executed under this contract for which payment is being claimed), and unless otherwise provided in the schedule the final balance shall only be payable as and when the contractors receive their final payment.

9. If the sub-contractor shall for three days after written notice from the contractors refuse or neglect to make good any defective work or to remove any goods or materials which the contractors or the architect may consider unfit or improper or defective, and to forthwith re-execute the work in a proper manner or supply proper goods or materials in the place thereof, the cost of making good, removing and supplying any such work, goods or materials as aforesaid shall be paid by the sub-contractor or deducted by the contractors from any moneys in their hands.

10. The sub-contractor will at his own expense maintain the work and materials executed or supplied by him under this contract in good working order and condition after the same shall have been completed for the period or respective periods mentioned in the fourth schedule hereto, and he guarantees that the work executed and materials supplied by him under this contract will come up to the standard and perform the functions provided and required in the principal contract or any variation or addition thereto made pursuant to the provisions of such contract.

11. The sub-contractor shall make his own arrangements for insurance against fire, and the contractors shall not be under any responsibility for any loss of damage caused to the sub-contractor or his work, tools or tackle resulting from fire, storm, tempest or explosion.

12. If at any time during any period in which the sub-contractor shall be employed on any work for the contractors a claim for compensation or damages shall be preferred against the contractors by a workman of the sub-contractor, or any dependent of such workman, or any person entitled to payment under sub-section 3 of section 1 (a) of the first schedule to the Workmen's Compensation Act, 1897, on account of an injury, fatal or otherwise, sustained by such workman while employed on such work, then the sub-contractor shall keep the contractors indemnified against such claim and all costs and expenses in relation to such claim.

13. In case of any conflict or inconsistency between the provisions of the principal contract, so far as applicable to the subject-matter of this contract and the provisions of this contract, the provisions of this contract shall prevail and be enforced accordingly.

14. In case any dispute or difference should arise under this contract or any matter or thing therein referred to, or anything to be done under and in pursuance thereof, such dispute shall from time to time be referred to some person to be agreed upon between the parties, or failing agreement to the president for the time being of the Institute of Builders, or some person nominated by him.

As witness the hands of the parties.

[Here follow the five schedules.]



ANGLE OF SOUTH AND EAST BLOCKS.

THE SAVOY HOTEL EXTENSION.

IT was one of the ardent desires of the late Mr. D'Oyle Carte that the Savoy Hotel should present an extensive front on the Strand. That wish is now an accomplished fact, for within a few months the three new blocks of buildings designed by Mr. T. E. Collcutt, F.R.I.B.A., and Mr. Stanley Hamp, A.R.I.B.A., his partner, will be entirely finished. The south block is already completed, and the east block will soon have its numerous rooms in order; while rapid progress is being made with the west block.

The total cost of the work will be nearly £1,000,000.

In various publications fragmentary accounts and views of the hotel have been published, but we are now able to give, for the first time, a full description of the work, supplemented by some of the architects' details, plans and specially-taken photographs.

Before proceeding to deal specifically with the extension, we may explain the methods of the American contractors, Messrs. James Stewart & Co., to whom the work of erection has been entrusted. As already exemplified at the Westinghouse works at Manchester, these methods consist of organization, diligent supervision and "push."

Among contractors it is an established fact that a quick job is a cheap job, and American contractors have devoted their chief attention to quickening the rate of progress of building works. They employ men of much better general education than the usual English foremen—men who have a capacity for invention, who can control operatives, overcome difficulties and "hustle" things. They pay them handsomely and in proportion to their efforts, so that a premium is placed on smartness; the principle, in fact, is applied throughout by increasing the wages of men if they work quicker. Thus Messrs. Stewart & Co. are paying their workmen 1d. an hour more than the union rate of wages. They do not pay increased rates other than this, however, for nightwork or overtime. Where men are working at full speed there is, of course, not so much time wasted, and money is not so long idle without earning a dividend, a very important point with a commercial

undertaking, and doubtless of special moment to the Savoy Hotel Co., in which the invested capital is very large. For the time being the extra pay is disproportionate, we think, to the large amount of extra work the men do, but in the States the unions have adjusted the matter and we may expect the same to happen in this country, so that double output will command double pay. We are informed that the cost of executing work in this country and in the United States is practically the same when the difference in economic conditions is taken into consideration. To work at high speed means that the organization must be very thorough, and this perhaps is the most noteworthy feature of Messrs. Stewart's methods. Very little individual responsibility is left to the workmen: the chief control is with one man, who must be thorough, capable and fit to withstand the strain. Mr. L. G. Peglau, the superintendent of the west block of the Savoy Hotel extension, to whom we are indebted for much of our information, is now working sixteen hours a day. Upon him rests the whole responsibility, though of course he has his assistants—foremen over the more important trades. A short description of his methods may perhaps explain the system upon which American contractors work. Mr. Peglau goes over the whole job in the morning, sees that everything is proceeding properly and takes notes of points that require attention. He then writes, telegraphs or telephones (according to the urgency of the case) to the sub-contractors or manufacturers and insists on their carrying out what is wanted at once. He brooks no excuses or prevarications, for it is arranged with each firm that an order can be countermanded at any moment if unsatisfactory, and the firms know that if they cannot supply the order their rivals will: but of course they are given due warning and no absurd demands are made. Similar rounds are again made by the superintendent, and in the evening he assembles his assistants together, gets them to state every point, and puts things straight at once.

A very close check is kept on all materials arriving, files of blue prints being in the office showing every piece of faience work, ironwork, joinery, &c., each numbered;

these are scored off as the goods arrive, so that the state of every part of the work can be seen at a glance. The files are open for reference by anyone at any time, in order that there may be no delay, and the men who receive goods have to see that each set of blue prints is kept marked absolutely up to date. When asked by the directors if he required gantries and space to store his materials, the superintendent replied that he should store his materials in the position to which they belonged; and this is what is done. The work is so organized and arranged that when the materials for each floor arrive they are stored thereon immediately, thus saving handling. When window-frames and doors are delivered the openings are ready to receive them, and they are put into position without delay. There is no loss of efficiency in night work, for it is so arranged that this is such that it can be as well done as in daylight.

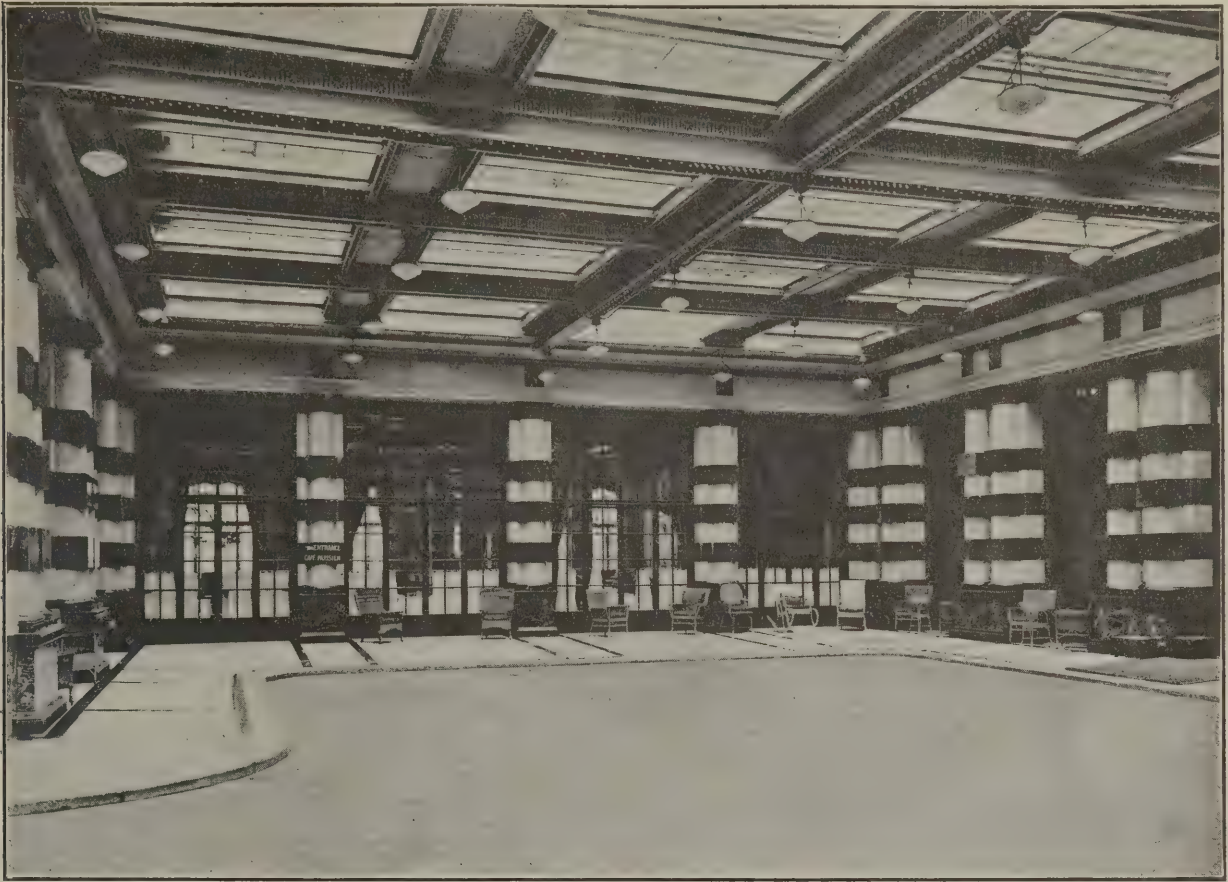
One characteristic incident may be mentioned as displaying American "push." Mr. Peglau, learning that it would take eight weeks to fit a hoist for materials in the interior lift well, at once ordered a timber frame to be constructed outside, with the hoist placed in it, and in a day or two this was ready! The hoist is worked by a 15-h.p. electric motor on the ground floor. Another noteworthy introduction of Mr. Peglau's is a chute constructed of wood running the whole height of the building with openings at each floor, ending at the ground level high enough up for a cart to back under; by means of this chute all the dust and rubbish is removed, thus saving the labour of carrying it down in sacks. Three men are kept constantly employed shovelling the dirt, &c., down the chute, whereas about fifteen would be required by the usual method. The dust is prevented coming out at the lower openings by sacks hung loosely over the latter.

No outside independent scaffolding has been used, the ironwork having been fixed in position in the American manner by a jib-boom crane in the basement, and the skeleton construction used as the scaffold, the walls being built from a kind of painters' scaffold supported on wood struts put out of the window openings. No gantries have been employed, lifts being used instead to bring up the materials. It is worth noting that although the steelwork carried all the weight the London County Council would not allow thinner brick walls. In Manchester the by-laws allow such walls to be built, and the London by-laws ought to make this provision so as to avoid waste. English architects have not yet accustomed themselves to rapid methods of construction, and the contractors at the Savoy have had some trouble in getting detail drawings, though Mr. Collcutt spends all his time with his staff in an office on the site to cope with Messrs. Stewart's marvellous appetite for details, which never seems to be satisfied.

There has been no friction between the sub-contractors, for the very simple reason that the contractors would not put up with it.

These Americans do not hold a very high opinion of our workmen; they say their own countrymen are much smarter, and they dispute the statement of our contractors that their work is inferior in finish and less solid than ours. We are informed, however, that the average number of bricks laid per day of eight hours on this job has been as high as 1,000.

Mr. Peglau deserves commendation for his energy, for when he took up the erection of the west block the east block was up to the cornice level, and he is now level and looks as though he will finish ahead. He has had much experience of the supervision of immense building works in the States, which he has erected in record time.



THE ENTRANCE COURT.

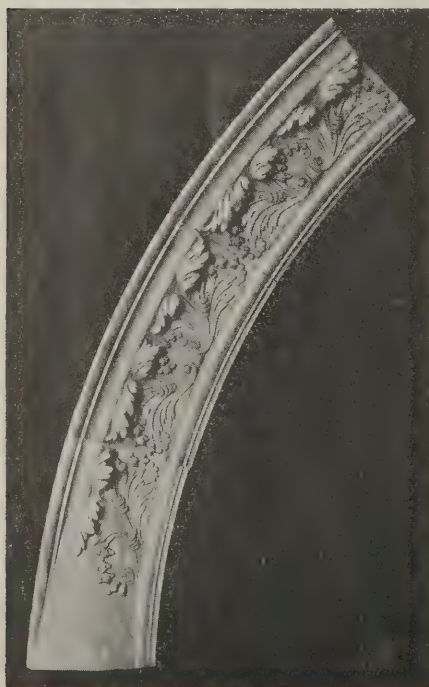


THE ENTRANCE HALL.

The new blocks adjoin the Hotel Cecil and are connected with the familiar Savoy building facing the Embankment—the new blocks being mainly occupied by residential suites. The site was formerly covered by "Beaufort Buildings," "Rimmel's," "French's" and other structures of early Victorian date, including "Simpson's Grand Divan and Tavern." The entrance from the Strand is between the east and west blocks and leads to a covered court flanked by the Parisian café on the left and the Savoy Theatre on the right. An arch springs across the entrance to the court, but this is not in reality a constructional feature, having been introduced merely to cover the flat (built up of girders and glass) that protects the court below.

The entrance court has been laid with rubber by Messrs. Charles Macintosh & Co., Ltd., of Cambridge Street, Manchester, at a cost of £2,000. The area is the largest anywhere so laid. The slabs each measure 14ft. 3in. by 40in. and are 2in. thick, there being altogether more than 16 tons of rubber, all of which was fitted *in situ* in little more than a week. The surface of the rubber pavement when laid on a good foundation, as in this case, remains perfectly smooth, so that it can be easily kept clean and sanitary by the use of a squeegee: too much stress can scarcely be laid upon this fact, which is already securing the adoption of rubber pavement in abattoirs, lairages, stables, &c., provision being easily made for drainage. Given the right quality of rubber, a good foundation and expert laying, the pavement is almost imperishable for road traffic, besides being absolutely silent and easy to keep in order.

Messrs. Macintosh have made a speciality of rubber pavement for nearly thirty years, having laid down the first of its kind, namely, on the roadways beneath the hotels at St. Pancras and Euston Stations respectively, the first being at St. Pancras in 1875. These two rubber pavements have proved most durable and satisfactory; the slabs have required little or no repair during the whole period, and they show but little sign of wear to-day, though the pavement of the roadways leading to them has been repaired at frequent intervals. Of course the initial cost of rubber pavement is considerable, but this is fully compensated for by its durability, noiselessness and sanitary quality.



ARCHIVOLT, GROUND FLOOR.



CAP TO GROUND-FLOOR PIERS.

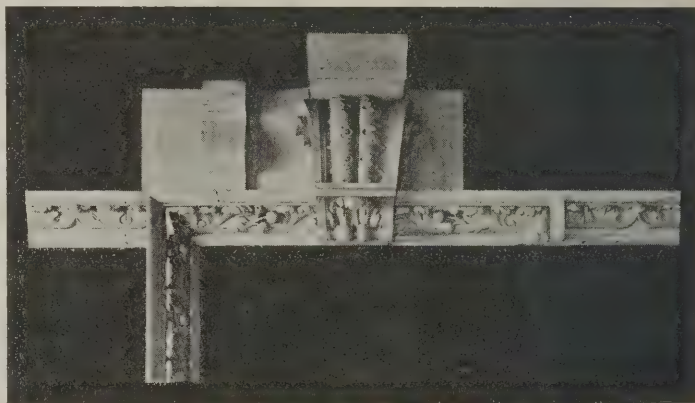
The entrance hall, designed by Mr. Colcutt, is an example of how old ideas may be treated in order to bring them into keeping with modern requirements. The frieze modelled by Mr. Pegram is noteworthy, and the woodwork carried out by Messrs. Gillow is a splendid specimen of this firm's work. Messrs. Gillow have been particularly fortunate in their choice of wood; the mahogany used is the finest Spanish with an extraordinary curl in the panels, which is now almost impossible to procure in the open market—the firm, however, as is well known, have an exceptional stock of the choicest woods collected during the last century. The waxing of the woodwork, instead of the customary French polish, is noticeable, as by this means an old mellow tone is given and the natural beauty of the wood maintained. The finely carved screens erected in the entrance hall are a special feature.

Descending a few steps we reach the grand foyer, carpeted in crimson. This is perhaps the most successful room in the hotel, having coupled columns against the walls, and a very richly moulded ceiling, cove cornice and wall panelling executed in fibrous plaster in the Georgian period by Messrs. George Jackson & Sons, of Rathbone Place, W., who also executed the ceilings and friezes in the staircase hall and entrance hall. The ormolu and crystal electroliers and pendants are of French manufacture, having been made in Paris from designs of the period of Louis XVI.; noticeable among the ornaments are two sculptured groups supporting large electric torches, the design being a replica of Germain Pilon's "Three Graces," well-known to visitors to the Louvre as having been designed and executed as a memorial to Henry II.

The furnishing of the foyer has been in the hands of Messrs. Bertram & Son, of Dean Street, Soho. Many of the settees are reproductions from the finest models of the Louis XVI. period. All the furniture is enamelled white and covered in rich green silk damask, the cards of which were cut from a fine old example; the window hangings being of the same material.

From the foyer one reaches the restaurant in the old part of the hotel. This has been greatly enlarged. The familiar carved and inlaid mahogany panelling has been continued by Messrs. Gillow, who have been most successful in reproducing the original work in every detail.

The chief feature of the buildings externally is the use which has been made of a glazed terra-cotta called "Carrara," which has been supplied by Messrs. Doulton, of the Lambeth Potteries, in accordance with Messrs. Colcutt and Hamp's drawings. After careful enquiries the directors were satisfied that "Carrara" offered them the material they desired. It is light in appearance—of the delicate colour of marble; it can be easily washed; and its original appearance can be retained without deterioration, an advantage of the utmost importance in the smoke-laden atmospheres of large towns, which rapidly convert hard non-porous stone into a sooty grey colour and thickly incrust all mouldings, robbing them of their delicacy, and causing soft stone to weather in streaks and inevitably decay. Terra-cotta has been largely used as a substitute for stone, but the "Carrara" ware successfully meets a difficulty often experienced, namely, it secures a brightness of colour, yet at the same time with delicacy of tone, which terra-cotta does not possess. It is just the thing, too, to use with richly-coloured faience, the adoption of which has been so often desired, on the score of introducing more colour into our streets; in fact "Carrara" is the logical material to use with coloured faience. The material is not new and untried, for although it has never been used on so large a scale as



WINDOW HEADS, FIFTH FLOOR.

at the Savoy there are several buildings in London erected over ten years ago where it was employed, and Messrs. Doulton are fully satisfied with its qualities of durability and permanence.

The drainage and plumbing system of the hotel, one of the most complete carried out in recent years, was also entrusted to Messrs. Doulton, under the direction and according to the plans of Mr. J. R. Anderson, A.M.I.C.E., M.I.M.E., engineer to the London Sanitary Protection Association. The amount of plumbing work done by Messrs. Doulton in four months may be considered a record performance. Although the work is not yet finished it is estimated that two months will bring about completion. About 120 plumbers have been and are still engaged, and the cost of labour alone up to date has exceeded £6,000. Had it not been for limited workshop accommodation, there being so many trades at work in the building at the same time, all requiring space, a still greater number would have been engaged. However, Messrs. Doulton believe they are correct in saying that never before have so many plumbers been employed in any one building. With fittings and appliances which are of a very elaborate and in some

cases unique pattern, it is estimated that something like £25,000 will be spent on this section of the hotel equipment. Mr. Anderson and his staff have been resident in the building since the commencement, and have been busily engaged in testing and re-testing the work stage by stage.

The whole of the underground drainage is of heavy cast-iron, the greater part of which is on basement walls or suspended below concrete floors, with iron inspection man-holes and access doors wherever necessary, all the latter having been specially designed to suit the peculiar wants of the case. The soil and ventilating pipes are of 10lb. hydraulic drawn lead, and in view of the height of the building precaution has been taken to make the main anti-syphonage pipes 3in. internal diameter. The whole of the main wastes for baths and lavatory basins are of

service mains to register the consumption in the service departments of the building. In short, everything possible has been done to make the sanitary system as complete and up to date as possible.

The baths are of cast-iron white-vitreous-enamelled inside and out, with a wide rolled edge and solid base, the front and side being under or behind the bath. The fittings are of a screw-down pattern with removable standing waste, the supplies to valves being exposed and the whole of the arrangement plated. A special feature is the shower, one being provided with each bath and being actuated by Doulton's patent mixing valve, which gives water at any required temperature but is so designed that hot water cannot be turned on first: to prevent splashing, a hinged glass door is fixed with each bath, being turned to the wall when not in use,

and twenty of lead tacks for same, 13 tons of solder, 1,200 stop cocks, 6,000ft. of iron pipe, and about 150 baths, lavatories and closets have been used. Messrs. Doulton were selected for the work out of a number of competing firms estimating on a bill of quantities.

The "Otis" electric elevator installation is probably the largest in any hotel in this country. Apart from the powerful "Otis" hydraulic lifts in the old hotel block, there will be seven electric passenger elevators, four freight elevators and ten service elevators. All are magnetically controlled—passenger and freight elevators from car only, service elevators from kitchen or main distributing floor. The car speed of the passenger elevators is about 300ft. per minute (in one case 400ft.). These have a lifting capacity in most cases of fourteen



"SIMPSON'S" DINING-ROOM.

3in. galvanized wrought-iron tubing of steam quality, and each branch waste as well as each main waste is provided with a special form of gunmetal expansion joint truly machined and fitted, to guard against fracture following contraction through the use of hot water. The disconnected wastes are also provided with adequate and efficient ventilators which, instead of being carried out through internal walls under or near window openings, as is often the case, are taken up above the roof line by means of special main ventilation pipes.

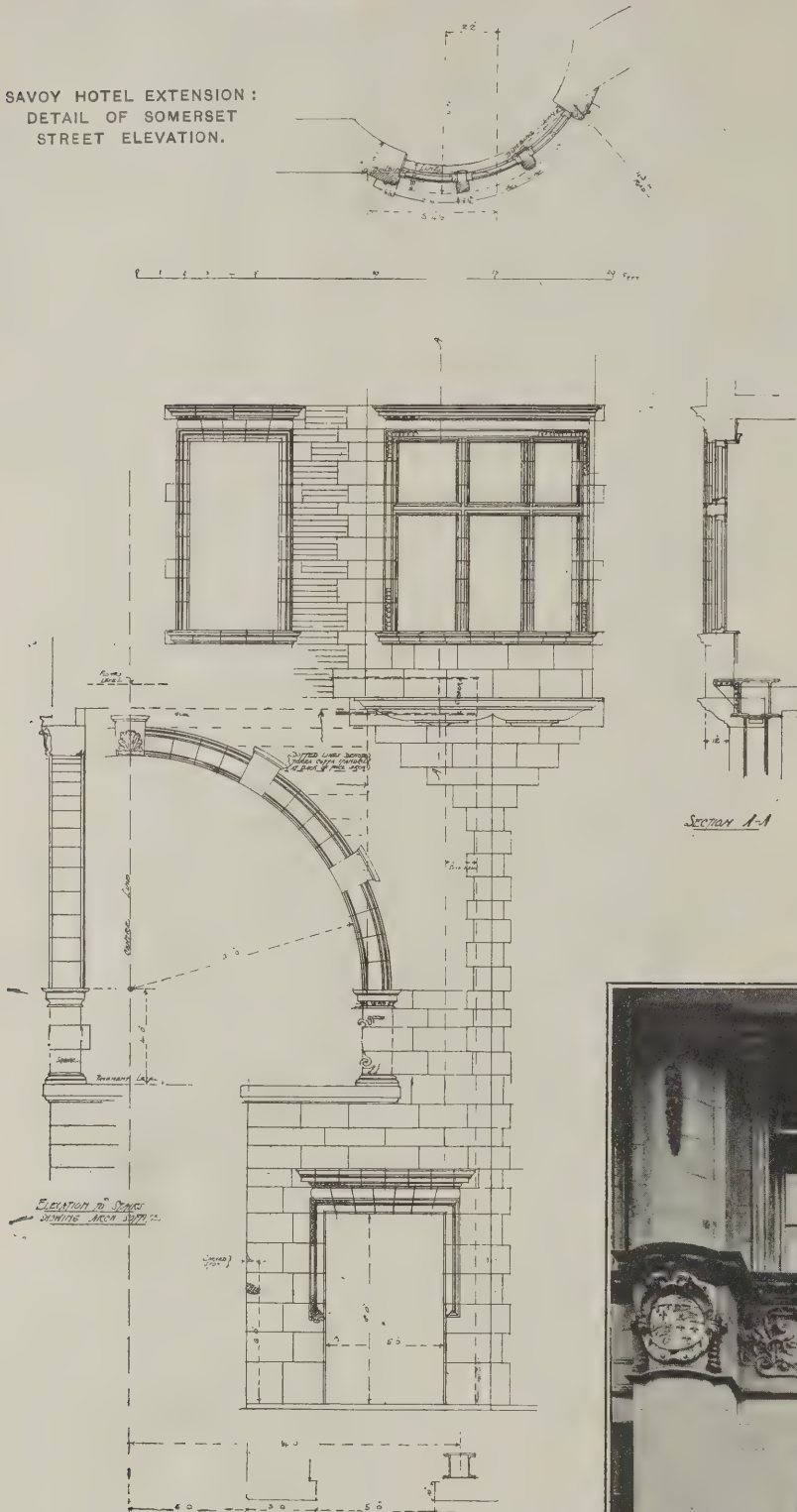
The hotel has its own water-supply from a newly-sunk artesian boring, and storage capacity equal to 50,000 gals. is provided on the roof by means of a series of tanks coupled up to form one complete reservoir. The arrangement of water-service pipes is most complete, provision being made for shutting off every fitting singly, or any particular floor or lavatory apartment. Meters are also introduced on many of the water-

and drawn round and held in position by a spring bolt when required. The lavatories are in polished statuary marble with 18in. skirting and 8in. frieze, supported on shaped white-metal legs; the basins are large and fitted with removable Waverley waste; the valves are lever handled to work with a quarter turn. Plated fittings for sponge, soap, tumbler, &c., are fixed to the skirting. In the public rooms for both ladies and gentlemen the lavatories are fixed in ranges, and in the gentlemen's retiring-rooms Doulton's "Aldwych" pattern urinals are provided, with white fireclay back, statuary marble divisions, and gunmetal hinged gratings over the channel. For the staff, spray baths are also supplied, and the same thought for comfort may be seen in all arrangements, including special closets for the use of foreign servants. All lavatories are supplied with quarter-turn quick-filling valves and 1½in. full-way quick-discharge valves. More than twelve miles of lead pipe weighing 200 tons,

persons. The magnetic control device is actuated by a lever-handle switch in the car. The two-speed device allows the car to be started from a floor on the slow speed until it is has travelled a few feet, being then put back again to the slow speed when the car approaches the floor at which it is to be stopped, thus enabling easy and accurate stop with floor levels to be made. If the car is required to make only a short trip, or lady passengers prefer the slower speed, it can be run at slow speed for its entire journey. A secondary or emergency switch is also provided in each passenger car, so that, in the remote contingency of any derangement of the operating switch, by means of the secondary switch the car can be brought to a standstill at any desired floor; if it be allowed to run the full extent of its travel the speed is automatically reduced as the car approaches either extremity, and on reaching either limit of travel it is similarly arrested.

The latest and best known "Otis" car

SAVOY HOTEL EXTENSION:
DETAIL OF SOMERSET
STREET ELEVATION.



safeties are employed. The car is immediately stopped and firmly locked to the steel guides or runners in the event of overloading, breakage of a lifting cable, excessive downward speed from any cause (whether ropes are broken or intact) or under stretching of a lifting cable. The landing gates or doors to each lift are provided with safety fittings to prevent the car being taken away from the floor with the gate left open, or a gate or door being opened unless the car is at the same floor level. Similar care in the matter of operation and "safety" provisions has been bestowed upon the freight elevators, the lifting capacity of which ranges from 15 cwt. to 2 tons. The service elevators travel at a maximum rate of 250ft. per minute. The magnetic control device is operated by a full set of buttons at the kitchen or distributing floor, the set of buttons for every lift comprising one for each

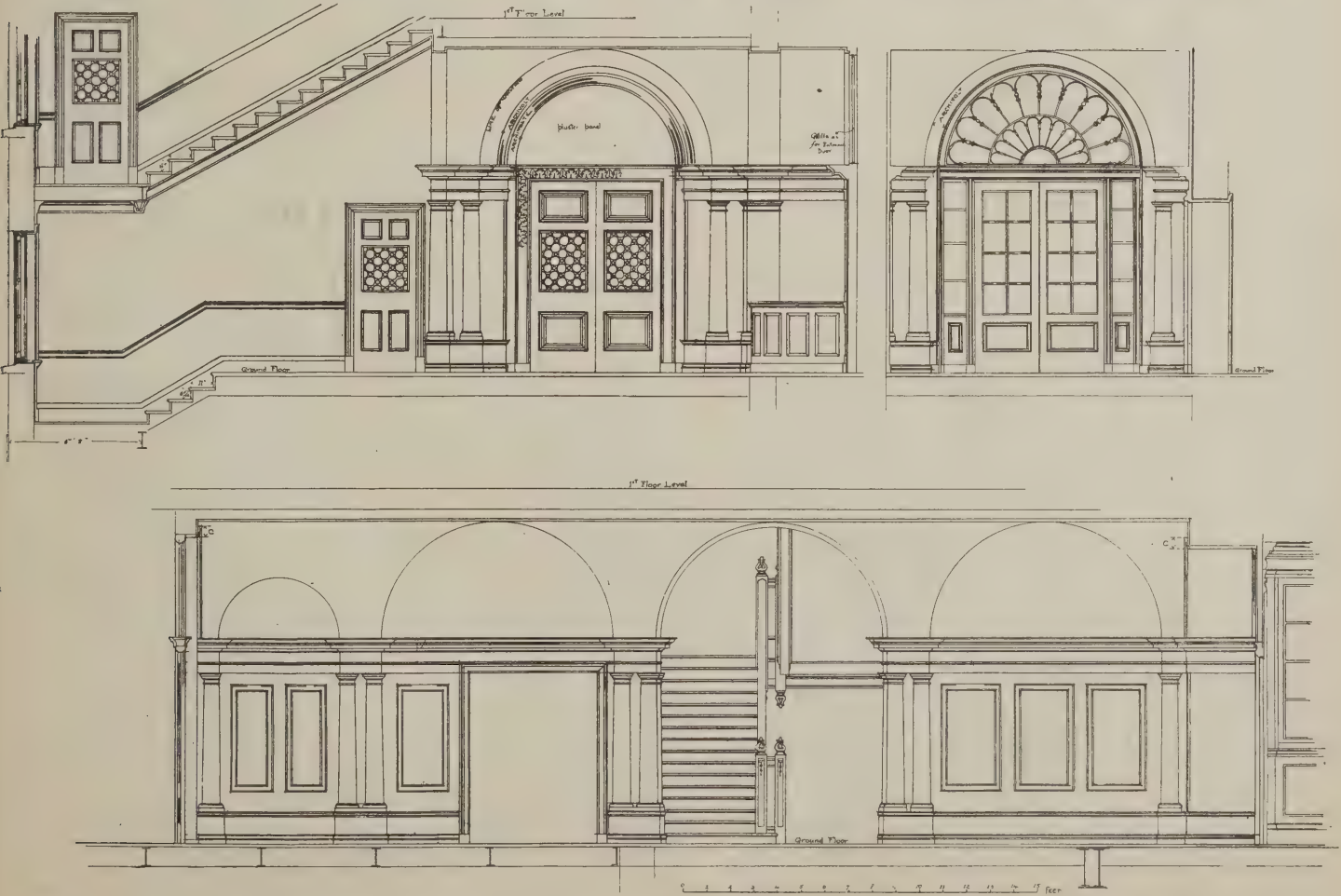
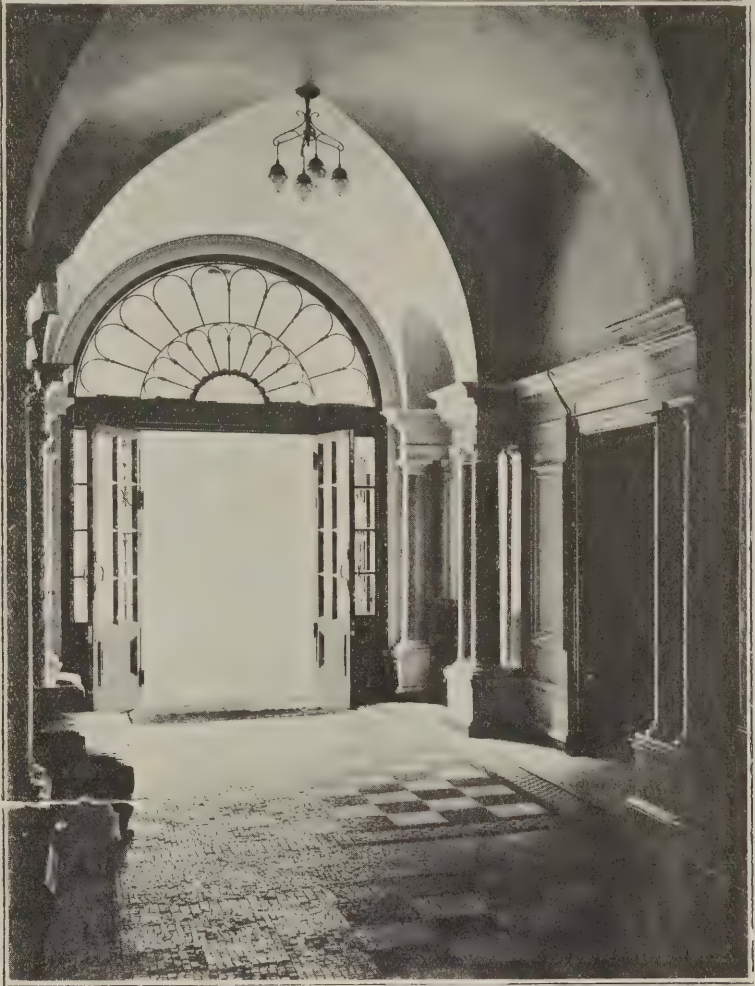
floor served by the car, with a "recall" button. Momentary depression of a button sends the car to a corresponding floor, the stopping being automatic. An electric signaling device is provided to indicate to the operator the whereabouts of any car, and the doors to the lift well are provided with fittings to prevent a car being called away whilst it is being loaded or unloaded and to prevent the door being opened except at that floor where the car is standing, thus preventing interruption of the elevator service by unnecessary opening of doors.

The ventilation of the hotel has been carried out by the Sturtevant Engineering Co., Ltd., of 147, Queen Victoria Street, E.C. The system is a combination of the vacuum and plenum systems, by which the devitalized air is exhausted from the various rooms by means of fans, fresh air being forced in to take its place. The fans are driven by belts from electric motors supplied with continuous current at 100 volts, provision being made for varying the speed of the fans to suit the requirements of the building. The fans are of the well-known Sturtevant "steel plate" type, and are designed to run at a moderate speed, due regard being paid to high mechanical efficiency. Four principal fans are employed, three for exhaust and one for fresh air: these are all placed on the roof and are so distributed that the work of each is approximately balanced. A fifth fan, in the basement, removes the hot air from the boiler and engine-rooms in the east block; the discharge from this fan is also employed for cooling the condensing water required by the refrigerating apparatus. In connection with every exhaust fan there is a vertical shaft which communicates with horizontal trunks on each floor. These trunks throughout the lower floors are formed of



galvanized sheet-iron, specially designed and made by the firm, but on the upper floors advantage is taken of the corridors provided with false ceilings, the intervening space forming an exhaust duct. Fresh air is delivered through a system comprising vertical shaft and horizontal ducts in a similar manner: it is taken in above the roof-level and passed through a water-curtain before entering the building. Special attention has been given to the executive departments, such as kitchens, sculleries, store-rooms, boiler- and engine-rooms, &c., these being connected with the fresh-air supply and also with the exhaust system; thus a thorough circulation of air is effected. All the dining-rooms are connected to the exhaust system, fresh air being drawn through gratings in the outer walls immediately behind the radiators, so that it will be thoroughly warmed in cold weather. On the upper floors adequate provision for ventilation has been made by furnishing a vent in all bathrooms, w.c.'s and corridors, which are in this manner connected with the exhaust system. Some idea of the magnitude of the scheme and the volume of air moved can be gained by realizing that over 60-h.p. is absorbed by the motors when driving the fans at their maximum output.

The boiler-house plant for producing steam for the electric light, steam heating, cooking and hot baths comprises four boilers of Messrs. Babcock & Wilcox's marine type with solid-drawn tubes. These boilers are fitted with economizers and superheaters and have patent chain grate stokers driven by electric-motors at each end of the shafting. Under normal conditions of easy working they are capable of evaporating 40,000lbs. of water per hour, which is equal to about 2,800-i.h.p. The gases of combustion are taken to the chimney through overhead flues constructed of steel, lagged outside with non-conducting material. The induced



SAVOY HOTEL EXTENSIONS: ENTRANCE HALL, SIMPSON'S.

T. E. COLLICUTT AND STANLEY HAMP, ARCHITECTS.

draught is obtained by means of an electrically-driven "Sirocco" fan. The coal is burnt smokelessly, being delivered to the boilers through chutes from an overhead bunker and automatically weighed as it passes through the chutes: it is fed into the bunker by a Babcock & Wilcox conveyor, this being also used for discharging ashes into an overhead ash hopper, which in turn is emptied into the carts that bring the coal. A special feature about this installation is that only two men are required to perform the whole of the work. This is a unique example of a plant of large power fixed in a small space, so thoroughly equipped with mechanical appliances as to reduce the labour required to a minimum, while possessing the highest efficiency.

The electric-lighting and power plant installed in the hotel by the Westinghouse Co. comprises two 200-k.w. and two 100-k.w. Westinghouse turbo generators supplying direct current at 100 volts pressure; a 700 ampere-hour Tudor battery of 51 cells; one 17½-k.w. automatic reversible booster and one milking booster; a 17-panel Westinghouse switchboard 34ft. long and 7½ft. high, the panels being of white marble 2in. thick (this switchboard allows the feeder circuits to be transferred to the Charing Cross and Strand supply mains when necessary); and various motors. The engines are of the well-known turbine type, which the directors decided to use in preference to any form of reciprocating engine, in order to avoid the slightest chance of vibration or noise, which forms so great a drawback to many modern hotels; and as an additional security the whole of the working plant has been placed in the third basement under the courtyard.

The steel contract for the hotel was obtained by Messrs. Dorman, Long & Co.,

Ltd., of Middlesbrough, in competition with foreign firms. Altogether about 2,500 tons of steel have been used, all of which was rolled at Middlesbrough, the finished steel being transported to London by water, landed at the Nine Elms yard of the company, and taken thence to the building. The details of this steelwork were of the most complicated nature, and it reflects great credit on Messrs. Dorman, Long that the work was so successfully carried out.

The concrete floors have been constructed on the "Coconco" system by Mr. A. F. Ammon, the sole agent in this country for the Continuous Concrete Constructions (Mullgardt's Patents). The special feature of these "Coconco" floors is the reinforcement, which consists of a steel wire lattice capable of itself supporting a load of 1,600lbs. per sq. ft. This lattice is placed continuously over the whole floor, from one end of the building to the other, so making the floor self-dependent. The lattice is suspended over the beams or girders similarly to the cables over the piers of a suspension bridge. By this system of construction floors may be constructed with extraordinary rapidity. A whole floor of nearly 23,000 sq. ft. was completed and ready for use in one week, and there is very little doubt that the rapid construction of the hotel extensions has been largely due to the adoption of this system of concrete construction for floors. A very important point in favour of "Coconco" is the fact that it can be cut through at any place for all sorts of purposes, such as hot-water, drain- and gas-pipes, electric wires, conduits, skylights, trapdoors, &c., without endangering its safety. As the steel wire lattice is so very strong, floors capable of standing enormous strains can be built extremely thin. The system is entirely

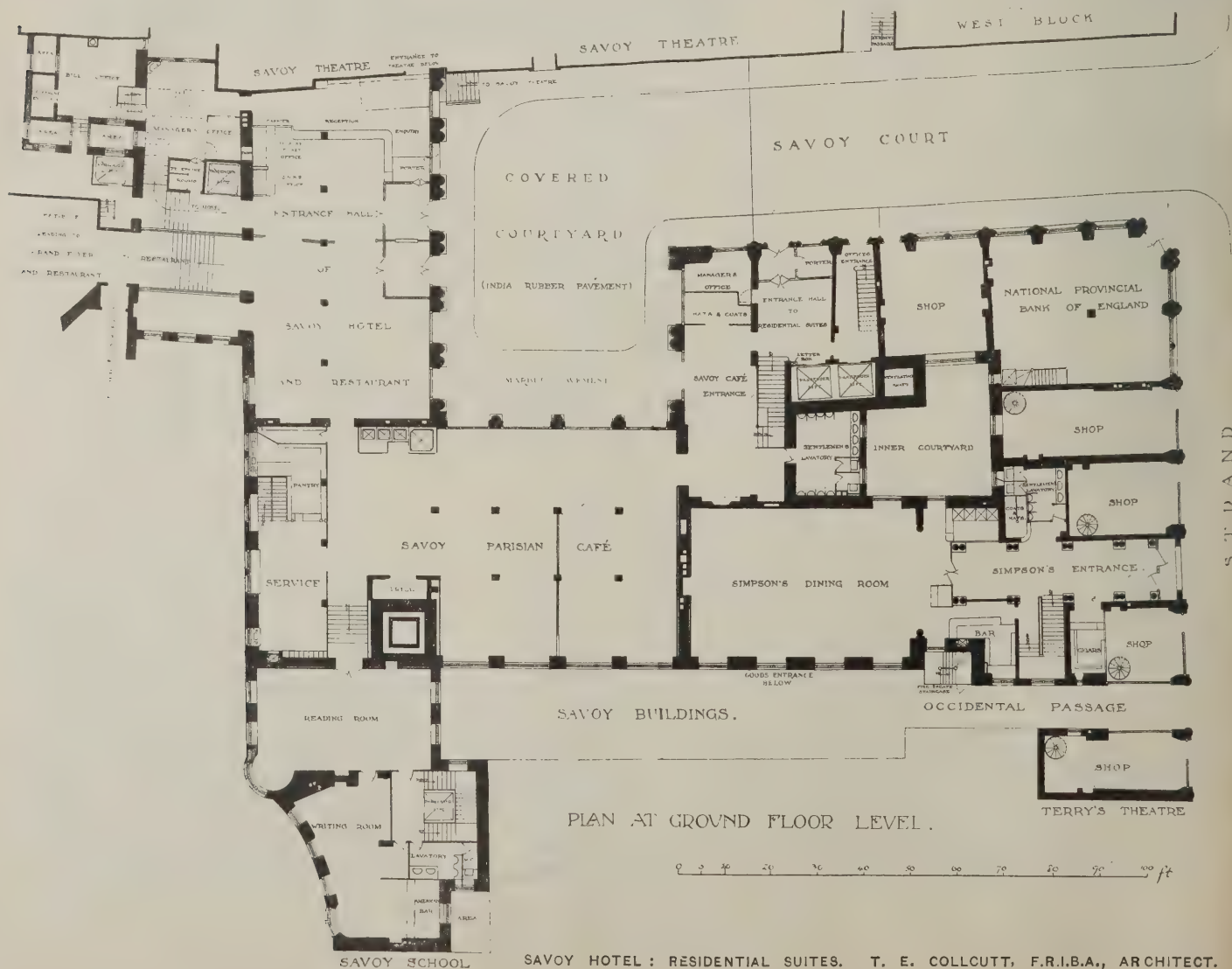
new to this country, but it has been successfully introduced by Mr. L. S. Biddulph into the War Office, Admiralty, and other important departments.

The decorations to the Parisian café, consisting of ceilings, plaster wall-panelling, groups of pilasters, woodwork, &c., were executed by Messrs. Jackson in the Louis style. They have also decorated with Carton Pierre and plaster ornaments of the Adam and Georgian periods more than 200 rooms in the extension blocks, consisting of sets of sitting-rooms and bedrooms.

It is interesting to note that a post-box will be provided on each floor, with an American Cutler mail chute, the first installed in England, enabling letters to be posted in a locked postal box, from which they descend untouched to the main postal box, which is cleared regularly by the Post Office authorities.

The bedrooms furnished by Messrs. Gillow are worthy of attention. The furniture is of a simple and perhaps rather severe order, relying on the refinement of detail and harmony of colour for its attractiveness rather than on obtrusive outlines and carvings. The result is entirely charming—indeed a marked change from the average hotel bedroom. The excellent finish of Messrs. Gillow's woodwork in the entrance hall, in the restaurant and other parts of the building amply justifies the directors' policy of employing only firms with a reputation to maintain.

The wall-lining and floor-paving of about 150 bathrooms and lavatories in the hotel have been executed by Rust's Vitreous Mosaic Co., of Church Road, Battersea, in their vitreous tiles and mosaic, in delicate tints of blue and white, the designer (Mr. Jesse Rust) having depended more on the varied lines of the material than on any elaboration



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EAST BLOCK.



SOUTH BLOCK AND ENTRANCE COURT.

ITT, F.R.I.B.A., AND STANLEY HAMP, A.R.I.B.A., ARCHITECTS.

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OF THE
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of design. All the mosaic work has been done by British labour.

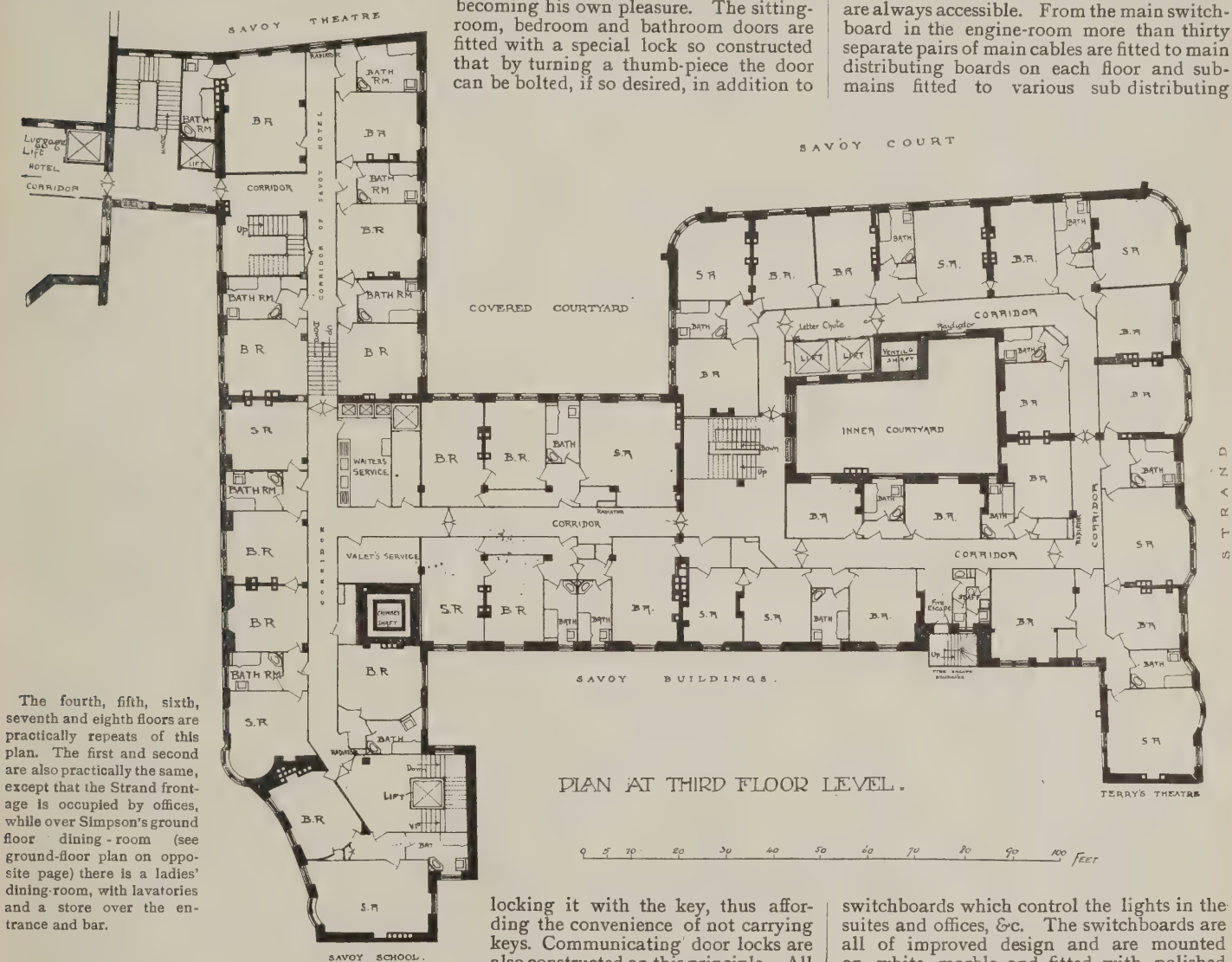
The cooking apparatus has been installed by Messrs. James Slater & Co., of the Holborn Engineering Works, 251, High Holborn, W.C., and the refrigerating and ice-making plant—the largest and most complete in any hotel in Europe—by Messrs. Hal Williams & Bridges, refrigerating experts (the machinery being by Messrs. H. Pontifex & Sons, Ltd., of Shoe Lane, E.C.). The cold storage accommodation, installed by Messrs. Taylor & Kensett, comprises eleven rooms.

The decorative marble has been supplied by Messrs. Burke & Co., of 43, Rathbone Place, W. The façades of the entrance hall, Savoy Theatre and Parisian café have been covered with green and ivory marble—the

been fixed; besides 1,250 sets of window casings, lining and dado, 360 over-doors, 900 pine doors, 850 mahogany doors, 58 sets of mahogany corridor screens and pairs of doors, and 1,250 casement and sash windows—all by Messrs. Goodall, Lamb & Heighway, of Manchester.

The locks and hardware have been supplied by Messrs. Yale & Towne, Ltd. The directors were influenced in selecting the Yale lock by years of experience afforded in the Savoy Theatre. The suite entrance door-latches are constructed so that the occupant can, by pressing a button, cause the latch to operate or not operate by a knob from the corridor side. The convenience of this is evident, for in the old way it necessitated the occupier opening the door to summons, this now becoming his own pleasure. The sitting-room, bedroom and bathroom doors are fitted with a special lock so constructed that by turning a thumb-piece the door can be bolted, if so desired, in addition to

Street, W.C. The lighting installation, which is one of the largest in London, comprises over 6,000 incandescent lamps, various motor circuits for lifts, &c., totalling to about 500-h.p., and 250 heater-plugs for hot-plates, &c. The whole of the wiring has been carried out in solid-drawn steel conduits with special steel boxes and cast-iron switch-cases, forming a complete earthed metallic system throughout. By this means the cables and wires are protected from all kinds of injury and the system is rendered fireproof, water-tight and perfectly safe in every respect. All the steel conduits are buried in the floors and walls, and special boxes are provided in the corridors and various places to enable the cables to be drawn through after the conduits have been fitted; thus the cables and wires are always accessible. From the main switch-board in the engine-room more than thirty separate pairs of main cables are fitted to main distributing boards on each floor and sub-mains fitted to various sub distributing



The fourth, fifth, sixth, seventh and eighth floors are practically repeats of this plan. The first and second are also practically the same, except that the Strand frontage is occupied by offices, while over Simpson's ground floor dining-room (see ground-floor plan on opposite page) there is a ladies' dining-room, with lavatories and a store over the entrance and bar.

green from quarries at Prato, about twelve miles north-west of Florence. This marble, which is really a Serpentine, is called Verdi di Prato, and was largely used by Pisano in the cathedral in Prato; by Giotto and Brunelleschi in the Duomo and in the Campanile at Florence; and by Brunelleschi in the Church of Sta. Maria Novella. The floor of the entrance hall is laid with squares of white and black marbles, as is also the footway of the courtyard. In the vestibule, grand foyer and entrance hall the piers, columns, pilasters and dado are of Rouge Jaspe du Var and Jaune Jaspe du Var, rich marbles from the mountains of Var in the South of France.

The vast amount of joinery work which has been executed for the hotel extensions will be realized from the fact that no less than 170,000ft.—equal to 32 miles—of architraves, skirtings and other mouldings have

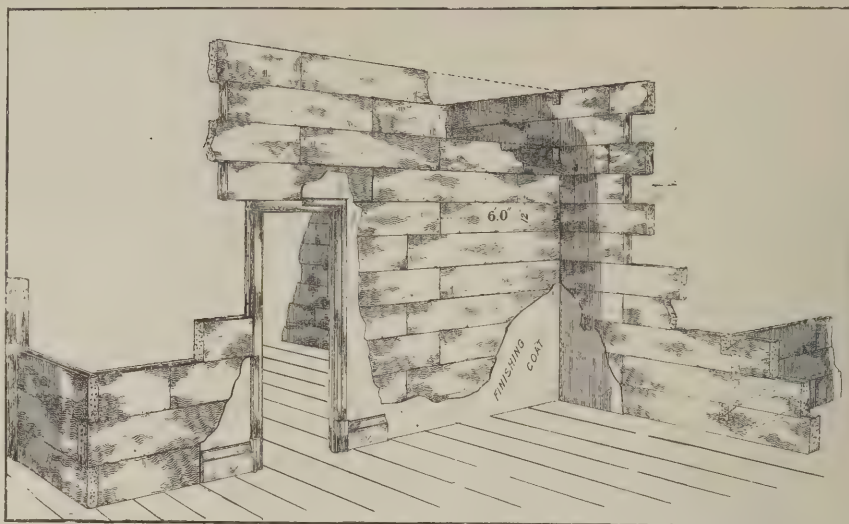
locking it with the key, thus affording the convenience of not carrying keys. Communicating door locks are also constructed on this principle. All casements are fitted with Cremorne bolts, flush bolts and casement stays, and when closed and fastened no winds can rattle them. Most of the casements are double, to prevent the noise of the street penetrating; above them are transom lights fitted with Yale lifters. All doors and casements are hung on cast-brass highly-polished butts having concealed hardened-steel washers (self-lubricating), with holdfast pin enabling same to be detached by removing the pin and allowing the door to swing back to 180 degs. All service, bathroom and lavatory doors are fitted with the Blount door check and spring, on the hydraulic principle.

The hardware equipment throughout the buildings is claimed to be the most complete in Great Britain.

The electric light and the electric bells, telephones and fire-alarms have been installed by Messrs. Strode & Co., of 48, Osnaburgh

switchboards which control the lights in the suites and offices, &c. The switchboards are all of improved design and are mounted on white marble and fitted with polished mahogany fronts to the iron cases: over 100 of these switchboards are fixed. Each suite is arranged so that the current consumed can be measured by a separate meter, the total number of meters fixed being 120. Messrs. Strode & Co., who have made a speciality of the steel conduit system for many years, have brought out a number of improvements in connection with the switches, plugs, flush boxes, &c. The arrangement of flush switches and flush plugs fitted in iron boxes which are let into the walls is very simple, and the ornamental plates designed and enamelled to harmonize with the decorations are very effective without being obtrusive: 4,000 switches and 700 plugs are in use. In the hall of each suite a special heater-plug is provided for electric hot-plates, and in each bedroom a separate heater-plug is also fitted for electric curling tongs, &c.—about 200 heater-plugs in all. By reason of

the American system of construction adopted in the building of the hotel a good many difficulties have arisen with regard to supporting heavy switchboards, conduits and switches, these being fixed on fireproof partitions. Messrs. Strode & Co. undertook to carry out the whole of the work in the record time of three months. They were enabled to place a large staff of experienced workmen on the building from the commencement, and, possessing all the necessary resources, have carried out their work in an incredibly short time. The electric-bell system is unique, the occupant of any suite being enabled to ring up any particular service required, which is at the same time indicated on a master indicator, this being electrically replaced at the same time that the service indicator is replaced: while for night service a special semaphore fixed outside each suite indicates which needs attention and the particular service required. The whole of the indicators and bells are mounted in polished mahogany cases; in fact, all the cases, blocks, &c., are constructed of Cuba mahogany polished to match the mahogany panelling in the building. The telephone installation is also a very elaborate one. A complete system of fire-alarms has been installed, four special fire-alarm pushes being fixed on each floor, to ring and indicate in four sections of the building. More than forty miles of steel conduit have been laid and 150 miles of cables and wires, and 200



"MACK" SLAB PARTITIONS AS FIXED IN THE SAVOY HOTEL EXTENSIONS.

men have been continuously engaged for about four months on this work.

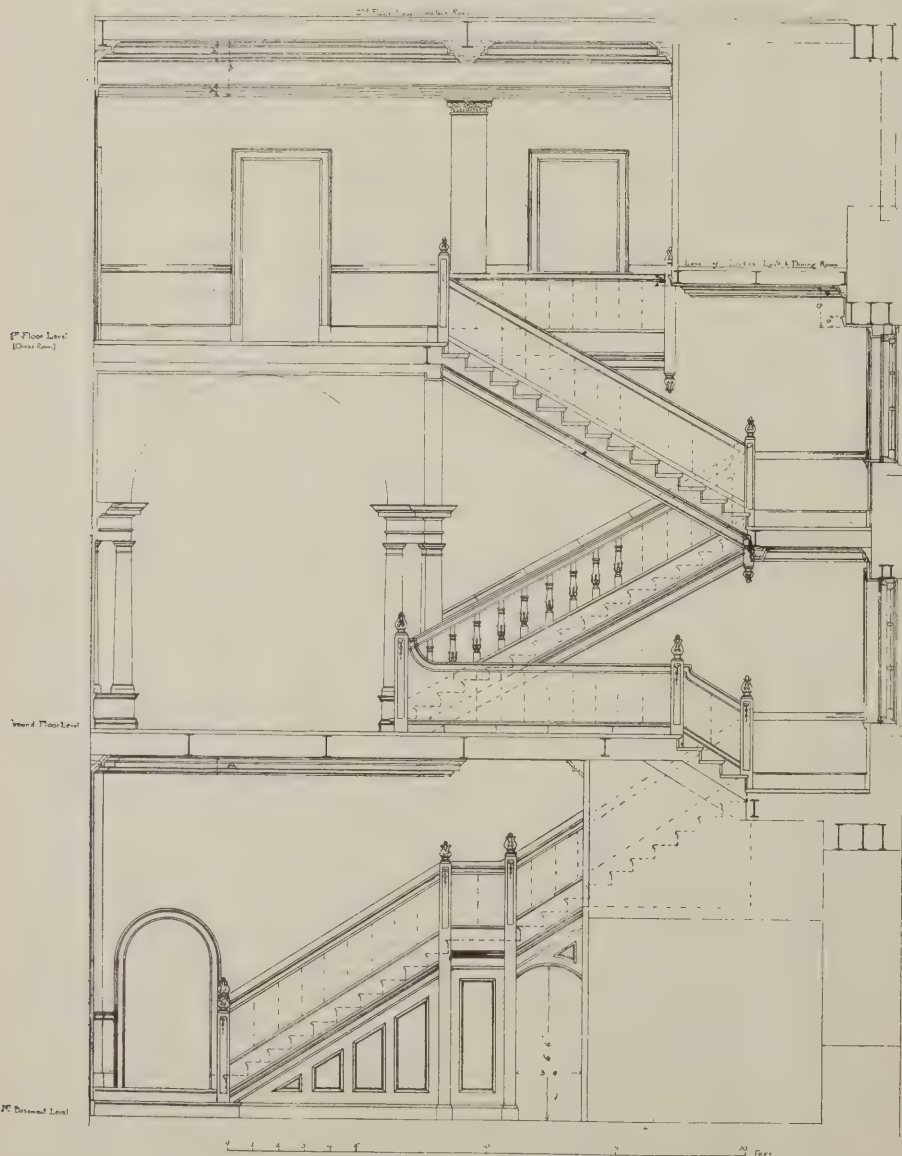
The whole of the partitions and ceilings, the plastering, and the cornices in corridors, general rooms and staircases have been executed by Messrs. J. A. King & Co., of 181, Queen Victoria Street, London, E.C. Over 40,000 yds. super. of patent "Mack" fireproof and soundproof slabs have been

used. The partitions were erected at the speed of 3,000 yds. per week—a record for this kind of work, and it is hardly necessary to add that this was a great item in hastening the completion of the building, for the use of "Mack" ceilings enabled the decoration to be commenced at a much earlier date, and at a greater speed, than if other methods had been adopted. The partition slabs are built up with a break joint, bedded in plaster, and the vertical hollow joints, formed by the concave ends of slabs (also the joints between slabs and door-frames, and slabs and brick walls) are grouted with plaster. Where the slabs are cut in half a concave is made in the ends of the slabs by sawing out a V piece. External angles are bonded over each alternate course, as in brickwork. The door-frames are fixed in position before commencing to fix the slabs; the general method being to fix $\frac{1}{2}$ in. square fillet to frame to receive concave end of slabs. Dado and frieze rails, skirting, &c., are skew nailed direct to the slabs without plugging. When fixed the slabs are finished with one or two coats of ordinary plastering, Sirapite or Keene's, &c.

It will be noticed that the corner of the east block is occupied by the National Provincial Bank of England, with two shops beyond, then "Simpson's" and two more shops (the last divided by a passage to Savoy Buildings).

"Simpson's" was purchased by the Savoy Hotel Co. about eighteen months ago. By a happy idea the huge mahogany board familiar to habitués of the old tavern reappears within the walls of the new and much more comfortable dining-room. The same old chess pieces, too, handled by masters of the game, from La Bourdonnais and Macdonnell to Blackburne and Teichmann, are to be found in the smoking-room.

The entrance to "Simpson's" gives access to a hall, 50ft. in length, leading to the gentlemen's dining-room on the ground floor. The hall is paved with a rich design of Rust's mosaic, the vaulted ceiling and panelled walls being enamelled white, and in close proximity to the entrance are a cigar shop (which serves the purpose of the old divan) and cloak-rooms. The dining-room is a fine apartment 17ft. high, with an area of 56ft. by 32ft. It is panelled with oak to a height of 13ft. and has a richly-coffered ceiling. The design adopted for the entrance hall and the dining-room is early Georgian. A broad stairway on the left of the hall leads down to the smoking-room, the walls of which are decorated with white enamelled panelling, while the frieze and ceiling are in modelled plaster. On the first floor is the ladies' dining-room, another fine apartment, 52ft. by 32ft., designed in the Adam style, and on the same floor are reception-rooms and supplementary rooms for dining.



SAVOY HOTEL EXTENSIONS: STAIRCASE, SIMPSON'S. T. E. COLLCUTT, F.R.I.B.A., AND STANLEY HAMP, A.R.I.B.A., ARCHITECTS.

Correspondence.

The Valuation Bill.

To the Editor of THE BUILDERS' JOURNAL.

8, LAURENCE POUNTNEY HILL,
CANNON STREET, E.C.

SIR,—You are no doubt aware that Mr. Long has received a deputation of the assessment committees who are anxious that amendments should be made in this Bill to meet their views. The assessment committees represent only the rating authorities, and the interests of the ratepayers have not yet been officially expressed in any way. I have therefore suggested that a meeting should be held in London of delegates from the various trade associations and others to appoint a

deputation to wait upon Mr. Long, and I shall be happy to supply any of your readers with information or to hear from them as to this proposed meeting, which should be held at the earliest date that can be arranged, so as to precede the second reading of the Bill.—Yours truly,

G. HUMPHREYS-DAVIES.

[The change that would be made by the Bill would practically transfer the control of the assessments (and therefore to a great extent the incidence of the rates) to the county and borough councils, who spend by far the greater part of the total rates raised; so that such councils would direct the assessments of railways, factories and premises occupied by traders with whom they compete.]

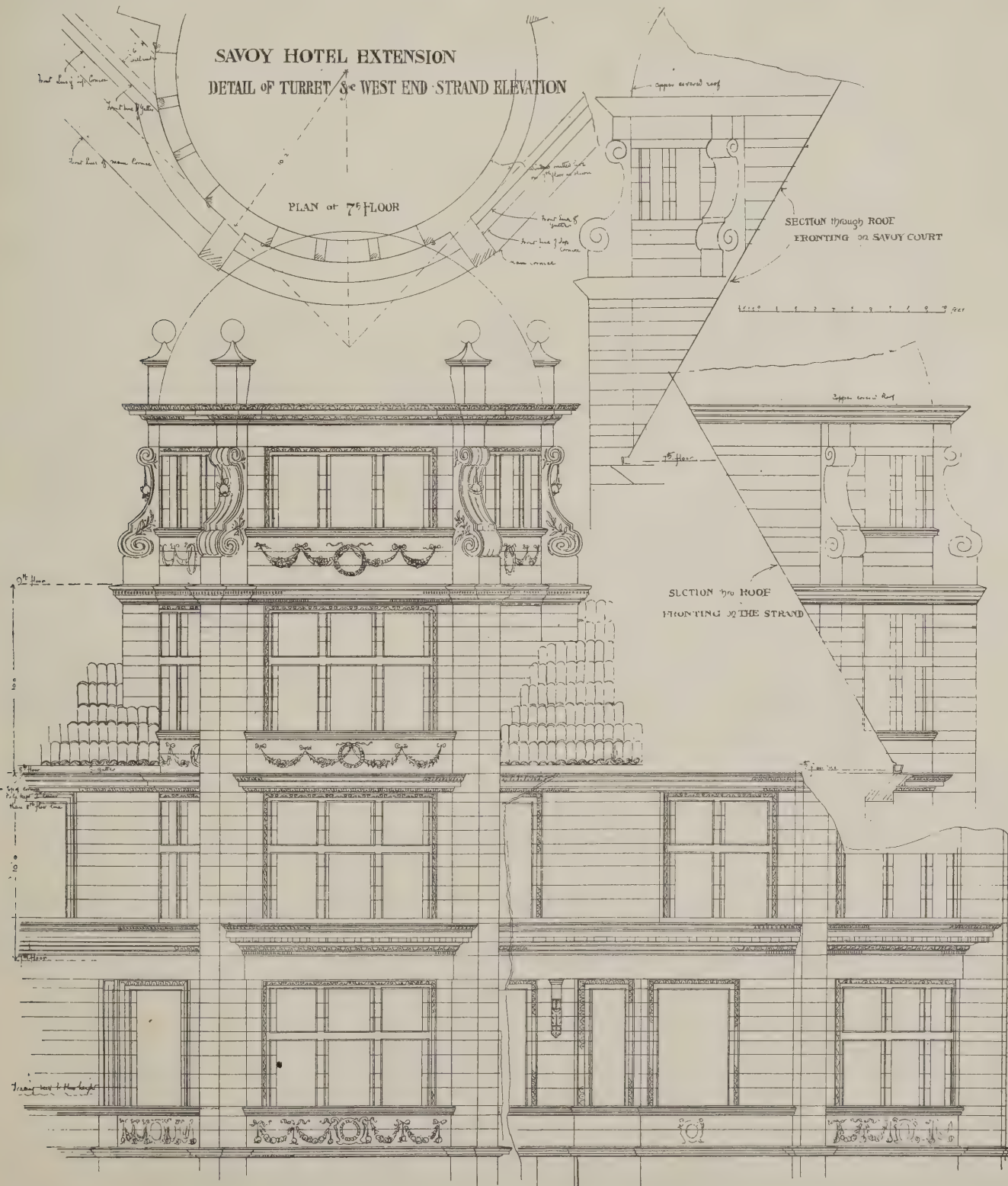
Discussion on Plenum Ventilation.

To the Editor of THE BUILDERS' JOURNAL.

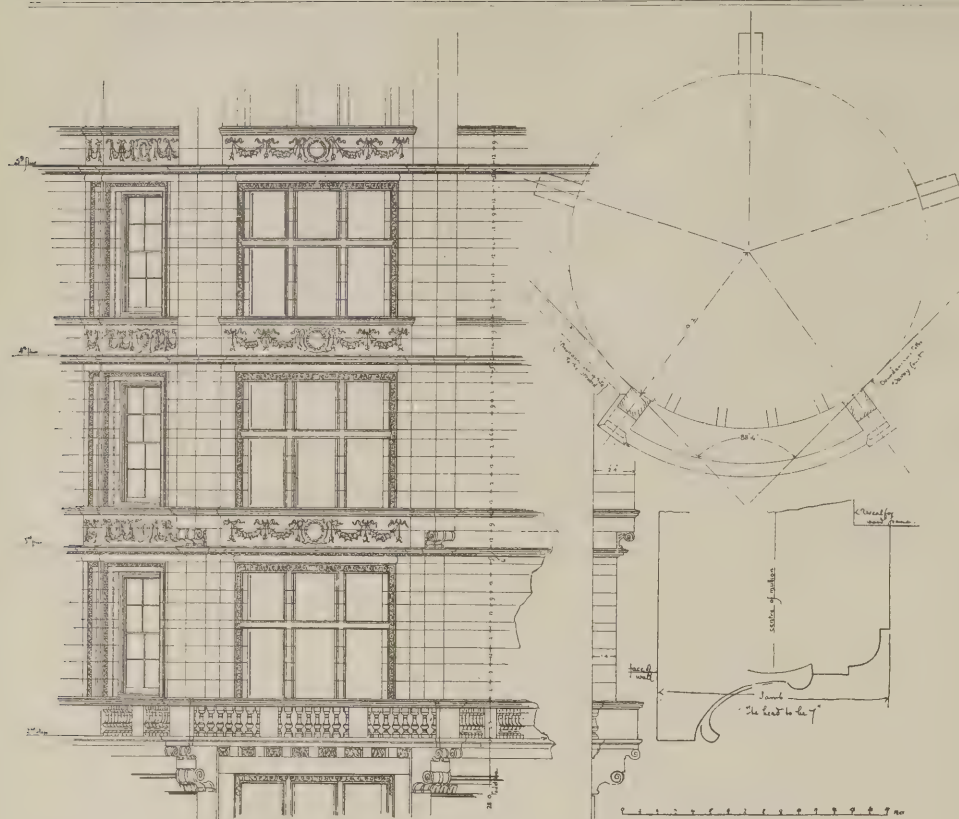
BIRMINGHAM.

SIR,—In consequence of the late hour at which this was taken at the meeting of the R.I.B.A. on June 6th there was no time in which to reply to the criticisms thereon, but with the sanction and approval of the president our reply will be given in the next number of the R.I.B.A. Journal, and until such has been perused we trust judgment may be withheld.—Yours truly,

WILLIAM HENMAN and
THOMAS COOPER,
Architects.
HENRY LEA & SON,
Consulting Engineers.



T. E. COLLICUTT, ARCHITECT.



SAVOY HOTEL EXTENSIONS: DETAIL OF ANGLE AT CORNER OF STRAND AND SAVOY COURT.

KINGSTON COMPETITION.

A LIMITED competition for new schools at Kingston-on-Thames has been held by the Education Committee of the Corporation among ten architects selected from ninety-eight applicants. Mr. T. J. Bailey, F.R.I.B.A., the architect to the late London School Board, disqualified the plans numbered "2" (submitted by Mr. Maurice B. Adams, F.R.I.B.A.) because the graded apartments did not accommodate anything like the number stipulated, and also those numbered "5" (submitted by Mr. H. O. Cresswell, F.R.I.B.A.) because the architect estimated the cost at £23,050, instead of the £15,000 required in the conditions. He recommends the first place to "No. 8" (by Mr. F. W. Roper, of 9, Adam Street, Adelphi, London, W.C.). In his report he adds: "With regard to the elevation some of the others are better and more attractive, notably Nos. 10 and 6, but the fitness of the scheme must not be judged on this. The author of No. 8 has not shown the 1,000ft. proposed to be reserved in the south-west corner, but has suggested two manual training rooms in boys' playground. There will be ample room, however, in the south-west corner for any buildings of the nature contemplated. The graded school block would be better turned over so as to get east lighting to the main line of classrooms." We consider Mr. Bailey unfortunate in his decision, as "No. 8" does not obey the conditions, which he drew up, and he should have disqualified it. The crux of the problem lies in the manner of placing the buildings on the site, which is an awkward one fronting on Bonner Hill Road and Oil Mill Lane; and "No. 6" (by Mr. A. Jessop Hardwick, of Eagle Chambers, Kingston-on-Thames) is the better solution: Mr. Hardwick's infants' block is not so cheap as "No. 8" (the drawings of which are very crude) because additional accommodation and exits have been very rightly provided, though not asked for; the details are better throughout and the plans generally superior for their purpose. "No. 10" (by Mr. G. E. T. Laurence, of Adelphi, London) also obeys the conditions and is superior to "No. 8," its position on the site being

practically the same as "No. 6," though the plans are not so well worked out. As the plans will have to be modified, we think it only fair that an architect who obeyed the conditions should be asked to do this. Mr. Arnold B. Mitchell, F.R.I.B.A. (No. 4), submits the finest elevation, but his plan is inferior. The other designs were submitted by Mr. W. C. Hulbert, of Westminster (No. 1); Mr. H. Carter Pegg, of Thornton Heath (No. 3); Messrs. Carter & Ashworth, of Kingston-on-Thames (No. 7); and Mr. P. A. Robson, A.R.I.B.A., of Westminster (No. 9). Each competitor received ten guineas.

A.A. STUDENTS' DESIGNS.

AN exhibition of students' designs was held last week at the Architectural Association's premises in Tufon Street, Westminster. On previous occasions we have expressed our satisfaction with the general quality of the work, and we are glad to be able to say the same this year. In the Advanced School Mr. Maurice E. Webb gained the first prize—his design for a police station and court house in a country town is exceedingly good—quite the best thing exhibited. Mr. Alick Horswell, to whom the second prize was awarded, also showed designs of considerable merit, those for a country bank, a country library and an inexpensive church being admirable.

In the elementary class Mr. D. G. Round was placed first and Mr. Cyril K. Roe second. The subjects set included a wooden mantelpiece for a study, a church porch in stone, a clock tower and a row of three cottages. Of the mantel designs we especially noticed Mr. W. H. Ludlow's, Mr. Ernest F. Ferry's and Mr. H. D. Aubrey's. The porch designs were inferior, but several of those for the row of cottages exhibited much promise, both in plan and elevation.

The A.A. Travelling Studentship was awarded to Mr. George Drysdale; the Architectural Union Co.'s prize was won by Mr. Cecil R. Pinsent, who submitted drawings of Eltham Palace; the Banister Fletcher bursary was secured by Mr. F. J. Watson Hart, whose drawings included some interesting ones of

the custom-house at King's Lynn; while "Wee Macgregor" was awarded the A.A. medal for his design of a West-End block of shops with flats over.

R.I.B.A.

Presentation of Gold Medal.

AT the last meeting of the session of the Royal Institute of British Architects held at No. 9, Conduit Street, W., on Monday evening, Mr. Aston Webb, R.A., presented the Royal Gold Medal for the promotion of architecture to M. Auguste Choisy, Inspecteur-Général honoraire des Ponts et Chaussées, Paris (some biographical notes on whom, by M. Marie-Ferdinand de Darstein, were given in our issue for February 17th last). Mr. Webb mentioned that on seven previous occasions the medal had been presented to a Frenchman, and he congratulated M. Choisy on the literary works—beginning with "L'Art de Bâtir chez les Romains" in 1872 and crowned by "L'Art de Bâtir chez les Egyptiens" in 1903—which now entitled him to it. He went on to explain how M. Choisy had set forth the manner of building by the ancients, and Professor Aitchison proceeded to elaborate this, ascribing to M. Choisy the title of the Columbus of ancient construction. Sir Lawrence Alma-Tadema and Mr. R. Phené Spiers also paid tribute to M. Choisy's genius.

Mr. John Slater then proposed a vote of thanks to Mr. Webb on his retirement from the presidential chair, this being supported by Mr. H. H. Statham and Mr. Butler Wilson, and welcomed with enthusiastic applause.

ARCHITECTURAL EDUCATION.

THE following gentlemen constitute the Board of Architectural Education appointed by the R.I.B.A. to consider existing facilities and suggest how they may be co-ordinated and improved:—Messrs. Aston Webb (chairman), Basil Champneys (vice-chairman), John Belcher, E. Guy Dawber (Architectural Association), Ernest George, Alexander Graham, Henry T. Hare (Architectural Association), W. R. Lethaby, M. E. Macartney, Beresford Pite, E. S. Prior, Halsey Ricardo, F. M. Simpson, Leonard Stokes, with Messrs. John Slater and Reginald Blomfield as hon. secretaries, and the following advisory members:—T. G. Jackson (Royal Academy), Sidney Webb (London University), Prof. E. Gardner (University College), Lewin Sharp (London County Council); Professor Capper (Manchester University), G. B. Bulmer (Leeds), T. Cooper (Birmingham), J. H. Webb (Architectural Association of Ireland), and representatives of Edinburgh, Liverpool, Cardiff and King's College.

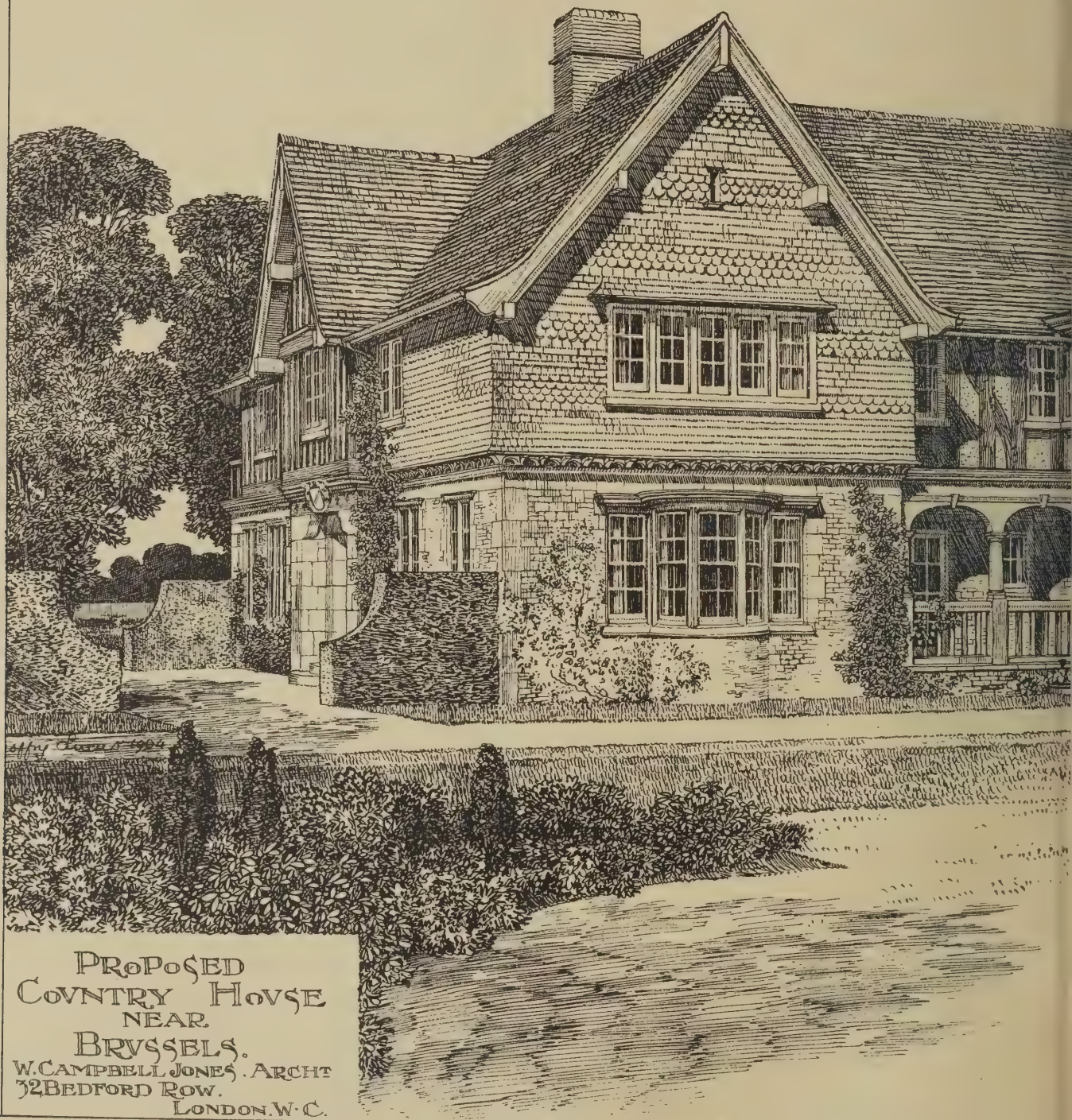
Obituary.

The late Mr. W. P. Winter, of Messrs. William Pelham Winter & Son, builders' merchants and factors, of Southsea, who died on February 28th, left estate of the gross value of £153,461.

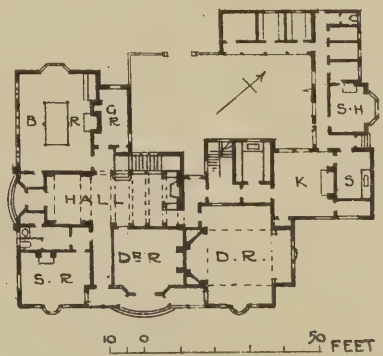
Mr. John Y. M'Intosh, architect, at Sparkbridge, near Greenodd, Ulverston, died recently at the age of fifty-four. He was one of Barrow's best-known men and designed almost all the schools in the borough.

Mr. William Cooper, architect, of Hastings and Seaford, died recently after a short illness. Mr. Cooper was about forty-five years of age. He was a member of the council of the Society of Architects and one of the Board of Examiners, and he previously held the office of honorary corresponding secretary. He was architect to the Milward Estate, Hastings, and the Blatchington Estate, Seaford, and among his designs were the Wilton Street Mansions at Bexhill.

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Complete List of Contracts Open.

DATE OF DELIVERY	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
BUILDING:			
June 23	Wimbledon—Enlargement of Schools	Urban District Council	R. H. S. Butterworth, Council Offices, Wimbledon, S.W.
" 23	Llanely—House and Shop	Guardians of St. Mary, Islington	W. Griffiths, Architect, Llanely.
" 23	London, N.—House	Shotley Bridge Primitive Methodist Circuit	W. Smith, Architect, 65 Chancery Lane, W.C.
" 23	Shotley Bridge—Two Residences	Shotley Bridge Primitive Methodist Circuit	Rev. F. Pickering, 10 West View, Blackhill.
" 23	Bratton Fleming—Schoolroom	Town Council	W. Watts, Bratton Fleming.
" 23	Ealing—Extensions to Hospital	Worcester Standing Joint Committee.	C. Jones, Borough Engineer, Town Hall, Ealing.
" 24	Oldbury—Police Station	County Council	Surveyor's Offices, Worcester Chambers, Pierpoint Street, Worcester.
" 24	Galway—Extension of Pier, Breakwater, &c.	Admiralty	H. Williams, Offices of Public Works, Dublin.
" 24	Paul—Three Houses, &c.	Edinburgh District Lunacy Brd.	Director of Works Department, Admiralty, 21 Northumberland Avenue, W.C.
" 24	Huddersfield—Additions to Chapel	Co-oper. & Industrial Society ..	J. Berry, Architect, 3 Market Place, Huddersfield.
" 25	Bangour—Kitchen	Coronation Committee	H. J. Blanco, 25 Rutland Square, Edinburgh.
" 25	Cardigan—Alterations to Post-Office	Great Grimsby Albion Steam Fishing Co.	Post Office Buildings, Cardigan.
" 25	Prestwick, Manchester—Six Houses	Great Grimsby Albion Steam Fishing Co.	Co-operative and Industrial Society, Prestwick, Manchester.
" 25	Redruth—Raising Clock Tower	Great Grimsby Albion Steam Fishing Co.	T. W. Joyce, Surveyor, Council Offices, Redruth.
" 25	Grimsby—Erection of Premises	Great Grimsby Albion Steam Fishing Co.	H. C. Scaping, Architect, Grimsby.
" 27	Ruabon—Chapel	Corporation	J. Evans, 63 Chapel Street, Penycas.
" 27	Glasgow—Library	Guardians of Aston Union ..	J. R. Rhind, Architect, 67 Hope Street, Glasgow.
" 27	Gravelly Hill, Birmingham—Repairs to Chimneys, &c. ..	Education Committee	Clerk of Works, Workhouse, Gravelly Hill.
" 27	Hull—Classroom	Great Western Railway Co. ..	City Architect, Town Hall, Hull.
" 28	Pengam—Extension to Shunter's Cabin, &c.	Commissioners of H.M. Works, &c.	Engineer, Great Western Railway, Newport Station, Mon.
" 28	Ipswich—Parcel Office	Great Western Railway Co. ..	Postmaster, Ipswich.
" 28	Paddington—Offices	Town Council	Engineer, Gt. Western Railway, Bishop's Rd. Station, Paddington.
" 28	Stepney—Additions and Alterations to Public Baths ..	Wallasey U.D.C.	M. W. Jameson, 15 Great Alie Street, Whitechapel, E.
" 28	Abertillery—Alterations and Additions to Church ..	Bridge Committee	Habershon, Fawcner & Co., 41 High Street, Newport, Mon.
" 28	St. Austell—Five Cottages, &c.	Borough Council	Messrs. Christies, Ranelagh Road, St. Austell.
" 28	Liskard—Additions to Hospital	Council	W. H. Traves, Engineer, Public Offices, Egremont, Cheshire.
" 29	Kemeys Commander—Stone Bridge	Admiralty	W. Tanner, County Surveyor, Newport Mon.
" 30	Lambeth—Public Library	Admiralty	H. Wakeford & Sons, 267 Clapham Road, S.W.
" 30	Hebburn-on-Tyne—Chancel	Admiralty	Hedley School, Argyle Street, Hebburn.
" 30	Slough—Alterations and Additions to School	Admiralty	Lee & Farr, Architects, Slough.
July 1	Boscastle—Houses	Admiralty	Director of Works Department, Admiralty, 21 Northumberland Avenue, W.C.
" 1	Cliff Creek—Houses	Admiralty	Director of Works Department, Admiralty, 21 Northumberland Avenue, W.C.
" 1	Ashwater, Devon—Repairing Transept, &c.	Burgh Commissioners	Rectory, Ashwater Church, Ashwater, Devon.
" 1	Cowdenheath, Scotland—Town House	Fermanagh Protestant Board of Education.	T. H. Ure, 43 Carnegie Street, Dunfermline.
" 1	Enniskillen—Works at Portora Royal School	D. Jones	Headmaster, Portora Royal School, Enniskillen.
" 1	High Bickington—Alterations to Chapel	Rathdram and Wicklow Joint Burial Board.	Supply Stores, High Bickington.
" 2	Llandefello—Reseating, &c.	Guardians	The Post Office, Llandefello, Kidwelly.
" 2	Merrymount, Ireland—Cottage, &c.	Urban District Council	J. Pansing, Town Hall, Wicklow.
" 2	Windsor—Alterations to Rooms	Town Council	Engington & Summerbell, 7 Park Street, Windsor.
" 4	Gainsborough—Public Library	Industrial Co-operative Society ..	Scorer & Gamble, Bank Street Chambers, Lincoln.
" 5	Windsor—Two Cottages	County Council	A. E. Stickland, Borough Surveyor, Alma Road, Windsor.
" 6	Dorchester—Reconstruction of Church, &c.	County Council	W. E. Dibben, 40 Icenway, Dorchester.
" 9	Cardigan—Extension to Church	County Council	John Evans, Auctioneer, Cardigan.
" 22	Berwick-on-Tweed—Alterations to Property	County Council	W. Gray, 2 Ivy Place, Berwick-on-Tweed.
" 23	Rio-de-Janeiro—Theatre	County Council	Commercial Intell. Branch, Board of Trade, 50 Parliament St., S.W.
ENGINEERING:			
June 24	Dublin—Pier Extension, &c.	County Council	County Council Offices, Dublin.
" 24	Belfast—Heating	Clyde Navigation	J. Williamson, 46 Royal Avenue, Belfast.
" 25	Glasgow—Electric Coaling Hoists	Corporation	G. H. Baxter, 16 Robertson Street, Glasgow.
" 25	Marshall, Harrogate—Pier	Gas and Electric Committee ..	G. W. Dixon, 14 Albert Street, Harrogate.
" 25	Loughborough—Plant, &c.	Education Committee	C. H. Gadsby, 21 Victoria Street, S.W.
" 27	Great Yarmouth—Electric Light Installation	Great Northern Ry. (Ireland) ..	J. W. Cockrill, Surveyor, Town Hall, Great Yarmouth.
" 27	Dublin—Two Engines	Donegal Railway Co.	T. Morrison, Secretary's Office, Amiens Street, Dublin.
" 28	Stranlar—Passenger Carriages	Great Western Railway Co. ..	General Manager, Donegal Railway Co., Stranlar, co. Donegal.
" 28	Grafton, near Saverlake—Loop Line	Urban District Council	Engineer, Paddington Station, Gt. Western Railway, Paddington.
" 29	Wood Green—Syphon	Royal National Lifeboat Institution.	C. J. Gunyon, Engineer, Town Hall, Wood Green, N.
" 30	Hartlepool—Lifeboat Station	Gas Company	S. H. Belk & A. Belk, Royal National Lifeboat Institution, Hartlepool.
" 30	Durham—Rotary Washer Scrubber	Commissioners of Sewers	A. B. Tobez, Gas Company, Durham.
" 30	Bolton—Sea Wall	Commissioners of Sewers	J. R. Bennett, Chaxhill House, Chaxhill, near Westbury-on-Severn, Gloucestershire.
July 30	London, S.E.—River Wall	Lambeth Borough Council	H. Edwards, Engineer, 346 Kennington Road, S.E.
" 4	Johannesburg—Cables, &c.	Municipal Tramways & Electric Supply.	Nordey & Dawbarn, 82 Victoria Street, S.W.
" 4	Bridgwater—Laying Pipes	Rural District Council	R.D.C. Offices, Bridgwater.
" 5	Windsor—Weighbridge, &c.	Guardians	P. Lovegrove, Clerk, Workhouse, Old Windsor.
" 6	Littlehampton—Providing and Laying of Water ..	Urban District Council	H. Howard, Town Offices, Littlehampton.
" 6	Oldham—Coal Breaking and Elevating Plant	Corporation Gasworks Committee	A. Andrew, Gas Offices, Oldham.
" 6	Tenby, Pembroke—Lifeboat House, &c.	Royal National Lifeboat Institution.	E. Bryant, Royal National Lifeboat Institution, Tenby, Pembroke.
" 12	London, S.E.—Cranes, &c.	London County Council	Clerk of the L.C.C., County Hall, Spring Gardens, S.W.
" 18	Trowbridge—Gas-Producing Plant, &c.	Urban District Council	W. H. Stanley, Market House Chambers, Trowbridge.
" 25	Boharm, Scotland—Bridge	Banffshire County Council	K. Davidson, Road Surveyor, Dufftown.
" 30	Shanghai, China—Electric Tramways	Municipal Council	J. Pook & Co., 63 Leadenhall Street, London, E.C.
August 1	Calcutta—Water-Meter Testing Apparatus	Corporation	Engineer to the Corporation, 2 Municipal Office Street, Calcutta.
" 3	Sofia—Electric Lighting and Tramways	Corporation	Commercial Intelligence Branch, Board of Trade, 73 Basinghall Street, London, E.C.
" 15	Bangkok, Siam—Carriages, &c.	Corporation	General Manager, Siamese Government Railways, Bangkok.
IRON AND STEEL:			
June 23	Belfast—Stores	Gas Committee	Gasworks, Belfast.
" 24	Nottingham—Cast-iron Valves, Hydrants, &c.	Corporation	S. Moore, St. Peter's, Church Side, Nottingham.
" 24	Rochdale—Railings, &c.	Corporation	S. S. Platt, Borough Engineer, Town Hall, Rochdale.
" 25	Bury, Lancs—Pipes, &c.	District Joint Water Board ..	J. Cartwright, Peel Chambers, Market Place, Bury.
" 30	London, E.C.—Stores	Central India Railway Co. ..	Central India Railway Co., Gloucester House, Bishopsgate Street Without, E.C.
PAINTING AND PLUMBING:			
June 23	Newport, Mon.—Painting	Guardians	Union Offices, Newport, Mon.
" 23	London, N.—Cleaning, &c.	St. Mary (Islington) Guardians	Steward, Innmary, Highgate Hill, Upper Holloway, N.
" 24	Hastings—Painting	Corporation	P. H. Palmer, Engineer, Town Hall, Hastings.
" 25	Birkenhead—Cleaning and Painting	Corporation	C. Brownridge, Borough Engineer, Town Hall, Birkenhead.
" 25	Crewe—Painting	Electric Lighting Committee ..	Electricity Works, Crewe.
" 25	Edinburgh—Painting	School Board	Mr. Carfrae, 3 Queen Street, Edinburgh.
" 25	Gateshead—Cleaning and Painting	Education Committee	E. J. Harding, Education Offices, Gateshead.
" 29	Hackney—Painting, &c.	Guardians	W. A. Finch, 76 Flusbury Pavement, E.C.
" 30	Wrexham—Cleaning, &c.	Education Committee	T. Bury, Clerk, Guildhall, Wrexham.
July 1	Lewes—Painting	East Sussex County Council ..	F. J. Wood, Surveyor, County Hall, Lewes.
" 2	Carlow, Ireland—Painting Gates, &c.	County Council	Secretary, Court House, Carlow.
" 4	London, E.—Re-decoration	Stepney Borough Council	M. W. Jameson, 15 Great Alie Street, Whitechapel, E.
ROADS AND CARTAGE:			
June 23	Chatham—Flints	Town Council	C. Day, Surveyor, Town Hall, Chatham.
" 23	North Walsham Granite	Urban District Council	E. J. Simpson, Surveyor to the Council, North Walsham.
" 23	Tynemouth—Street Works	Rural District Council	A. S. Dinning, 21 Elison Place, Newcastle-on-Tyne.

[Continued on p. xviii.]

Advertising Notes.

A peculiarity of good advertising is that it doesn't hammer at the front door until it has awakened all one's prejudices, and deep-rooted objections, but it slips in the back way and opens the front door quietly and without fuss ready for the entrance of your goods.

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The charge for Advertisements under this heading is 1s. 6d. per insertion not exceeding four lines, and 6d. per line afterward, prepaid. Three insertions may be had for the price of two. Advertisements must reach the Office not later than 5 o'clock on Monday.

AN ARCHITECT is willing to render assistance in his own office in the preparation of perspectives, designs, working drawings, quantities, &c.—CHAS. CARTER, M.S.A., Sherwood Lodge, Nottingham. 386

ADVERTISER, with previous engagements as Architect's Assistant, Railway Contractor's Cashier, and Building Contractor's Agent, seeks engagement in any similar capacity. Good references.—C. T. C., 17, Marlston Avenue, Ford, Devonport. 452

ARCHITECT and SURVEYOR'S EXPERIENCED ASSISTANT, age 25, over nine years in good offices, desires ENGAGEMENT. Thorough good all-round man. Excellent testimonials.—Uno., The Close, Grassmoor, Chesterfield. 416

ARCHITECT and QUANTITY SURVEYOR'S ASSISTANT (24) desires re-engagement; 8 years' good general experience, also surveying and levelling; energetic; excellent testimonials; London or provinces.—Box 437, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

ARCHITECT'S ASSISTANT desires engagement in good office, 7 years' provincial experience; provincial centre or near London preferred; excellent references; moderate salary.—Apply Box 455, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

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ARCHITECT'S CHIEF ASSISTANT disengaged, A.R.I.B.A., large experience in all classes of work, good draughtsman, specifications, perspectives, dilapidations, &c.—Address Box 457, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

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ARCHITECT'S GENERAL ASSISTANT, 17 years' varied experience, 8½ years' last place; working drawings, details, specifications, &c.; age 34; salary £3; good references; town or country.—L. M., 41, Crauford Terrace, Maidenhead, Berks. 448

ARCHITECT'S JUNIOR ASSISTANT requires ENGAGEMENT, well up in general office routine, moderate salary.—A. C., 34, Great James Street, W. 417

ARCHITECT'S JUNIOR ASSISTANT, 21, desires engagement; 4 years' experience, accurate draughtsman; Elementary and Advanced Construction certificates, South Kensington; moderate salary.—ASSISTANT, 34, Wingate Road, Hammersmith, W. 431

BRICKLAYER, good, well up in fire work, range-setting or outside work, wants permanency. Good references.—E. WILLIAMS, 2, Kempson Road, Fulham, S.W. 421

BUILDER and CONTRACTOR'S MANAGER, age 34, desires re-engagement, 10 years' experience in estimating, quantities, details, adjustment of accounts, and general management, excellent testimonials.—Address, Box 453, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

BUILDERS' CLERK seeks ENGAGEMENT. Book-keeping, tracing, assisting quantity Surveyor, and general routine. Excellent references. Age 26.—P.H.G., 2, Fernfield Villas, Bonner Hill Road, Kingston-on-Thames. 447

BUILDER'S CLERK; thorough knowledge d.e. bookkeeping, timesheets and general routine. Good draughtsman. Town or country. Moderate salary.—E. H., 11, Archibald Road, Tufnell Park, N. 427

BUILDER'S SON (age 19), owing to father's death, seeks SITUATION as CLERK. Managed his father's office four years. Distance no object. Out of London preferred.—Apply, CHARLES WING, Birchington, Kent. 430

BUILDER'S SON seeks permanent sit., (age 23), as Builder's Assistant; time taking &c.; fill up spare time bench and fixing; moderate salary.—Apply Box No. 436, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

CARPENTER and JOINER. Factory, estate, or otherwise; making, fixing, or general repairs; bench preferred; 15 years' town and country experience; good references; aged 38.—B. W., 19, Waterloo Road, Leyton. 472

CARPENTER and JOINER (29), seeks PERMANENCY. Steady, capable and willing. Good all-round hand. Bench, fixing, or jobbing. Used to London and country work.—G. E. H., 23, Heigham Road, East Ham. 443

CARPENTER & JOINER seeks re-engagement at bench and fixing, or as estate house carpenter; good references.—Apply, ALLISTER, 3, Laystone Cottage, Lancaster Road, New Barnet. 459

CARPENTER and JOINER, improver, seeks employment in good firm, town or country; low rate.—J. B., 86, North Street, Edgware Road, W. 420

CARPENTER and JOINER, improver (21), seeks SITUATION. Inside or out. Good references.—BRACKETT, 19, Albert Road, Henley-on-Thames. 450

DRAUGHTSMAN is desirous of assisting others in the PREPARATION OF DRAWINGS, &c., at his own address.—J., 44, Thornton Road, Thornton Heath. 407

ENGINEER - SURVEYOR, Advertiser (French) seeks appointment as above. Good Home and Foreign experience in Mechanical and Constructional work, able to prepare details, plans, surveys, levels, &c. (Home or Abroad).—Apply, J. G., 17, Cathcart Hill, Highgate. 438

FRENCH POLISHER, First-class, seeks work of any description, job or constancy, any distance.—E., 59, Milton Avenue, East Ham. 467

GENERAL FOREMAN seeks ENGAGEMENT. New or alteration works. Practical and energetic. Good manager. Carpenter and joiner. Abstainer. Long references.—ELLISON, Homestead, Cromwell Road, Hounslow, Middlesex. 414

GENERAL FOREMAN seeks engagement; just finished; 11 years' good reference last employer, done good work and large jobs. Carpenter, 32 (abstainer).—G. E., 86, Park Road, Baker St., N.W. 429

HOT WATER FITTER requires situation. Good references, can take charge of work.—T. S., 70, Gordon Road, Ilford. 474

PAPERHANGER (first-class), just disengaged after five years' job, requires WORK. Piece preferred, but willing to fill up time.—A. G. F., 2, Liebert Villas, Westcombe Hill, Blackheath, S.E. 428

PLUMBER, GAS and HOT-WATER FITTER, also zinc work; suit builder or jobbing shop. London and country experience.—E. G., 76, Wharton Road, Shepherd's Bush, W. 432

PLUMBER, GAS and HOT WATER FITTER is open to take work; labour and materials or labour only.—H. F., 30, Ion Road, Thornton Heath, Croydon. 465

PLUMBER seeks WORK. Distance no object. Indentures to show if required. Rate of wage 10d.—R. G. SMITH, 30, Forest Rise, Walthamstow. 451

SAWYER wants JOB. Town or country. Can sharpen and gullet saws and work bench, deal frame, band saw, overhead panel-planer, trying-up.—H. B., 31, Shirley Grove, Lavender Hill, S.W. 471

SENIOR ASSISTANT (30), now DISENGAGED, able Designer of considerable experience in competition and general work. Would take charge. Salary, £3 10s. Excellent references.—Box 442, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

SHOP FOREMAN of Joiners and Machines, 15 years with last employer, good references and reason given for being out.—A. G. COOPER, Rose Cottage, St. John's Road, Ipswich. 435

STUDENT, R.I.B.A., age 21, with 5½ years' good Yorkshire experience, wishes for situation in London Office either as IMPROVER or JUNIOR. Highest references, drawings, &c.—Apply Messrs. W. and D. THORNTON, Architects, Wakefield. 458

TIMEKEEPER, &c. Young man (26), with builder or contractor. Holds two "Sanitary" also "Building Construction" certificates. Nine years' experience as c'lerk. Salary arranged.—W. S., 162, Leighton Road, Brecknock Road, N.W. 456

TO BUILDERS AND SPECULATORS.—Wanted joinery, carcassing stairs (piecework), any quantity. Lowest prices.—REID, 91, Mill Hill Road, Acton, W. 468

TRACER and COLOURIST. Berth wanted in an Architect's office, 2 years' experience, age 19, moderate salary.—M. W., "Bilbrough," Windsor Road, Doncaster. 449

WORKING FOREMAN of CARPENTERS and JOINERS, thoroughly practical in all kinds of household repairs and alterations. Abstainer, good timekeeper. Country preferred.—A., 90, Replingham Road, Southfields, S.W. 422

YARD FOREMAN and TIMEKEEPER seeks re-engagement in Contractor's or Builder's yard, used to all building materials and plant; distance no object.—ABSTAINER, 60A, Dalston Lane, N.E. 441

Appointments Vacant.

CITY OF HULL.

TO FOREMEN JOINERS AND OTHERS.

The Corporation require the services of a WORKS FOREMAN to supervise the repairs of Corporation property and Council schools, the joiners, bricklayers' and plumbers' work executed by the Property Committee's workmen, and the joiners', and coachbuilders', work in the repair of trams. The Corporation property includes several public buildings, also shops, houses, &c., of an annual value of about £7,500; there are about 60 Council schools, and 116 tram-cars. The salary attached to the post is £150 per annum. None need apply except first-class men, accustomed to the control of a number of workmen, capable in emergencies, and able to estimate the cost of minor work accurately. Preference will be given to applicants who are joiners by trade.

Canvassing directly or indirectly will be a disqualification. Applications, in candidates' own handwriting, endorsed "Property Foreman," are to be addressed to the undersigned and delivered before the 20th June, 1904.

By order,
A. E. WHITE, M.Inst.C.E.,
City Engineer.
Town Hall, Hull,
6th June, 1904.

DEVON COUNTY COUNCIL.

The Education Committee invite APPLICATIONS for the following APPOINTMENTS in the Architect's department:—

- (1) Chief Assistant, commencing salary £200 per annum. Candidates must have had experience in the planning and building of Schools, and the general management of an Architect's staff.
- (2) Two Draughtsmen at £75 per annum.
- (3) Two Clerks of Works, commencing salary £100 per annum, with an allowance for travelling expenses. Candidates must possess a thorough knowledge of building construction and sanitary work; they must also be able to prepare rough estimates, and specifications for minor repairs.

Selected candidates may be required to undergo a practical examination.

Age between 30 and 45. Further particulars and form of application can be obtained on application, by letter only, to the Architect. Letters enclosing an addressed foolscap envelope should be endorsed "Architect's Staff," and should state for which appointment particulars are required.

Applications must be received not later than Thursday, 30th June.

Canvassing will be a disqualification.
PERCY MORIS, A.R.I.B.A.,
Architect to the Committee.

2, Heavitree Park, Exeter,
15th June 1904.

BUILDING SURVEYOR WANTED immediately (temporary engagement of about three months) in Architect's and Surveyor's office within 20 miles of London, to measure up school buildings and value work; good knowledge of building materials requisite.—Full particulars and salary required to H. C. C., 41, Parliament Street, Westminster, London, S.W.

DESIGNER and DRAUGHTSMAN WANTED. Only those accustomed to designing and sketching need apply.—JOHN F. WHITE, The Pygmy Works, Bedford.

GOOD FIGURE GLASS PAINTER WANTED.—Apply, stating age, wages, and experience, EMPLOYERS' ASSOCIATION, Victoria Street, Toronto, Canada.

JUNIOR DRAUGHTSMAN WANTED in large Engineering Works, N.W. London; building department. Knowledge of engineering useful.—Apply by letter stating age, experience and salary required, to Box 444, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

WANTED, thoroughly competent and reliable Builder's Clerk (single) to take sole charge of office.—Apply, stating age, &c., to J. L. & H. STEER, Builders, &c., Clyst St. George, Topsham, Devon.

WORKING or COMPETITION DRAWINGS, PERSPECTIVES, TRACINGS, PHOTO-COPIES (OR SUN-PRINTS), MODELS OF BUILDINGS, LITHO-PRINTING.

THE LONDON DRAWING & TRACING OFFICE, (Estd. 1883.) 98, Gray's Inn Road, W.C. (Adjoining Holborn Town Hall.)
Telephone, No. 1011 HOLBORN. Manager—JOHN B. THORP. Telegrams: "DIVIDITORE," LONDON.

Educational.

ALL TECHNICAL EXAMINATIONS.—First place in every open competition during last two years. Correspondence or Resident Tuition. Vacancy for Articled Pupil.—G. A. T. MIDDLETON, 19, Craven Street, W.C.

QUANTITIES.—A course of Correspondence Lectures on the preparation of Quantities on the most approved London System COMMENCED SEPTEMBER 28th. For particulars apply Box 2546, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

R.I.B.A. EXAMS.—Personal and Correspondence tuition; courses of any duration. Apply for syllabus to Mr. A. G. BOND, B.A. Oxon., A.R.I.B.A., 115, Gower Street, London, W.C. (late Howgate and Bond).

STRUCTURAL STEELWORK Correspondence Classes specially for Architects, Assistants, Surveyors, Builders, and Draughtsmen, are held by the Midland Engineering Bureau, Strand, Derby. Specialists in American and Continental Construction. Thorough Tuition. Send for descriptive booklet J. (1904), and read opinions of past students.

THE SOCIETY OF ARCHITECTS.

FOUNDED 1884.

INCORPORATED 1893.

Telegrams: "Crypt," London. Telephones: 1852, Holborn.

STAPLE INN BUILDINGS, HOLBORN, W.C.
The next qualifying Examination for membership will be held in OCTOBER, 1904.

C. McARTHUR BUTLER, Secretary.

Miscellaneous.

LIFTS.—WM. AUG'S GIBSON, LTD., formerly President of American Elevator Co., later Managing Director Otis Elevator Co., Ltd. Temple Bar House, 28, Fleet Street, London, E.C.

ARCHITECTS ably assisted at Advertiser's own office; designs, details, specifications, quantities, estimates, &c. Lowest fees.—Box 461, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

BUILDERS' Competition Tenders priced. Quantities taken out. London experience, 20 years. Terms, speculative or for time occupied.—B.A., 9, Harrington Square, N.W. 466

BUILDER'S ESTIMATES prepared from quantities for competition tender by experienced (and successful) surveyor.
Prompt attention. Moderate charges.

SURVEYOR { 39, Victoria Street,
Westminster, S.W. 460

CLINKER FOR SALE, washed and graded for Bacteria Beds; any quantity; about 1s. 8d. per cubic yard. Large stocks on hand. Also slag and concrete goods.—Apply WAKE & HOLLIS, LTD., Collingwood Buildings, Newcastle-on-Tyne.

HOUSE DECORATORS and CONTRACTORS. Working Partner wanted with small capital to improve existing business; established 25 years; no agents or cards.—Apply c/o E. S. A., 2, Stafford Street, High Street, Peckham, S.E.

MARBLE, GRANITE, STONWORK. Supplied to Architects and Builders. Send for Builders' Price List and Quotations. Telephone 1159, Hampstead.—KELLY & Co., Kilburn, Mill Hill, N.W., etc.

OFFICE FOR ARCHITECT.—Part of quiet private office—in good central position for West End or City—low rental, £50.—Box 462, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

PARTNER WANTED with £1,000 to £1,500 to pay out retiring one, for old-established London business manufacturing specialities in heating and ventilating. Practical knowledge and connection amongst architects desirable. Terms very favourable for third share.—H. M. G., c/o DIXONS, 195, Oxford Street, W.

ROOFING BOARDS, 1 x 6 and 7, 8s. square; 10 squares, 7s. 6d. free on rails; oak quartering and planking, 2s. ft. cube.—MAY & BUTCHER, Timber Merchants, Heybridge.

WANTED AT ONCE, a large quantity of scaffold boards, short poles, putlogs, and cords; quote particulars and lowest prices delivered at Ipswich to FRED BENNETT, Contractor, Ipswich.

WIRE NAILS, Mixed, 8s. per cwt.; 28 lbs., 2s. 3d.; Screws, mixed, 28s. per cwt.; 28 lbs., 7s. 6d.; wire, cut, wrought and malleable nails, tacks, shoe nails, rivets, &c., wholesale prices.—MIDLAND NAIL WORKS, 25 and 26, Rea Street, Birmingham. (John Pyne, Proprietor.)

Drawings, Tracings &c.

CITY OF LONDON AND FINSBURY DRAWING AND TRACING OFFICES. Experienced assistance of every kind promptly given. Architectural Designs, Perspectives, Competitions. Specifications, Quantities, Photoprints, Lithography. No. 113, Finsbury Pavement (Moorgate), London, E.C. Telegraph, "PITCHPINE, LONDON." Phone, 1099 Central

Competitions Open.

BOROUGH OF WHITEHAVEN.

PROPOSED FREE PUBLIC LIBRARY. The Mayor, Aldermen, and Burgesses of the Borough of Whitehaven are prepared to receive COMPETITIVE DESIGNS for Public Library Buildings, the total cost of which is not to exceed £4,000.

The Corporation have appointed S. WASHINGTON BROWNE, Esq., R.S.A., Edinburgh, as assessor in the Competition.

The author of the design placed first in order of merit will be employed as Architect for the Library upon the usual terms of professional remuneration, viz., 5 per cent. on the cost of the executed work. The author of the design placed second will receive a premium of £30, and the third £20.

Conditions of Competition and Schedule of accommodation can be obtained on application to the undersigned on the payment of one guinea, which will be returned on the receipt of a bona fide design.

All enquiries in respect of the competition to be addressed to the undersigned on or before the 1st JULY, 1904, and designs lodged not later than 15th August, 1904.

By order,
Town Hall, THOMAS BROWN,
Whitehaven, June 8th, 1904. Town Clerk.

Contracts Open.

COUNTY COUNCIL OF MIDDLESEX.

NAPSBURY ASYLUM, near ST. ALBANS, HERTS.

TO BUILDERS AND CONTRACTORS.
The Visiting Committee of the above Asylum invite TENDERS for the following WORKS, viz.:

- Construction of about six miles of Roads, of various widths, with drainage, culverts, etc.
- Construction of Railway Siding, Branch Line, Dock, Turn-Table, etc.
- Supply and fixing of Fencing of Airing Courts, and Main Entrance and other Gates.

Bills of quantities are being prepared by Messrs. Young and Brown, of 104, High Holborn, as regards each section of the work.

Contractors willing to tender for one or more sections of the work must send in their names to the Clerk of the Committee, together with a statement of work which they have executed, and a deposit of £5 5s. on or before the 24th JUNE, 1904. Firms tendering for two or three sections of the work are only required to send in one deposit of £5 5s.

The bills of quantities will be forwarded in due course. Tenders must be delivered to the Clerk of the Committee not later than Noon on MONDAY, the 4th day of JULY, 1904. Separate tenders are required for each section.

The amount of the deposit will be returned to persons who have sent in bona fide tenders.

The Committee do not bind themselves to accept the lowest or any tender.

WALTER GEO. AUSTIN,
Guildhall, Westminster, S.W. Clerk of the Committee.
14th June, 1904.

EMPLOYMENT REGISTER.

Too late for Classification.

- 459.—CARPENTER AND JOINER, bench and fixing, estate and house carpenter, good refs.
- 460.—BUILDERS' ESTIMATES prepared from quantities for competitions by experienced surveyor.
- 461.—ARCHITECT'S ASSISTANT with own office, designs, details, specs., quantities, estimates, &c., low fees.
- 465.—PLUMBER, gas and hot water fitter, labour, or labour and materials.
- 466.—BUILDER'S ESTIMATING CLERK, tenders priced, quantities taken out, 20 years' London ex.
- 467.—FRENCH POLISHER, first-class, job or constancy.
- 468.—JOINERY, carcassing stairs (piecework), low prices, any quantity undertaken.
- 471.—SAWYER, can sharpen and gullet saws; bench; frame band saw; overhand panel planer, trying up, &c.
- 472.—CARPENTER AND JOINER (38), factory, estate or otherwise, fixing or general repairs, bench preferred, 15 years' ex., town or country, good refs.

See p. xxii and xxiii for the Employment Register.

Property & Land Sales.

By Order of Executors and Trustees.

HERSHAM, SURREY.

Valuable FREEHOLD LAND, about one mile from Walton Station, consisting of charming site for a gentleman's residence. An excellent 5-acre meadow, abutting on the River Mole, a small grass orchard and two good cottages, in all about 7½ acres.

MESSRS. DANIEL WATNEY & SONS are instructed to SELL the above by AUCTION, in Four Lots, at the Mart, Tokenhouse Yard, London, on THURSDAY, JULY 7th, 1904.

Particulars, with plan and conditions of sale may be obtained of STANLEY N. VIGERS, Esq., Solicitor, 8, Frederick's Place, Old Jewry, E.C.; and of the AUCTIONEERS, 32, Poultry, London, E.C.

HOLBORN (13, 15, 17, 19, Vine Street).—Valuable FREEHOLD. Excellent position. Ripe for immediate improvement and erection of warehouses, factory, or model dwellings. It now has twelve spacious work rooms, large cellars, gateway entrance, yard, etc. Present rental £130, on short tenancy. Possession could be had. Frontage 57 ft. 6 in., area 2,910 sq. ft. Solicitors, Messrs. Thrupp & Chidell, and Sharp, 7, Old Cavendish Street, W.

MR. FREDERICK WARMAN, F.A.I., will include the above in his SALE at the MART, E.C., on JUNE 28, at TWO.

Auction Offices, 66, Chancery Lane, W.C.; Highbury Corner, N.; and Crouch End.
Telephones, 1, North, and 1405 Holborn.

By Order of the Corporation of the City of London.
LOWER THAMES STREET.—Valuable BUILDING SITES, with extensive frontages on this thoroughfare, widened to 60 ft., and also the Corner Site of No. 12, PUDDING LANE, the whole having a total area of about 8,600 ft., lying between Fish Street Hill, Pudding Lane, and Botoiph Lane, close to Billingsgate Market, London Bridge, and the centre of the City.

MESSRS. REYNOLDS and EASON will LET the above by AUCTION, on eighty years' building leases, in various lots at the MART, Tokenhouse Yard, E.C., on Friday, July 1st, 1904, at TWO o'clock.—Particulars, with plans and conditions of letting, of E. A. BAYLIS, Esq., City Comptroller; or D. J. ROSS, Esq., City Engineer, Guildhall, E.C.; at the MART; and of the AUCTIONEERS, 43, Bishopsgate St. Without, E.C.

TO THOSE OUT OF A SITUATION.

We are frequently receiving letters from those who have used our "Situations Wanted" column, expressing their satisfaction and pleasure at quickly getting appointments through THE BUILDERS' JOURNAL.

Remember that six free insertions in the Employment Register are given to every advertiser, and thus the "want" is kept before our readers at a minimum cost.

These following letters prove how useful the Employment Register is:

A Nottingham Architect writes:

"I am in want of a good assistant. I have been looking through your Employment Register, and think either No. 274 or 320 the most likely to suit me. Please send me particulars respecting them."

From another Architect:

"I enclose replies to advertisements in your Employment Register, which kindly post in course to their respective destinations and oblige."

A London Architect who advertised for an assistant writes:

"The advertisement has brought me a great number of replies."

Write your advertisement clearly and send it to the Manager, Builders' Journal, Great New Street, Fetter Lane, E.C.

5 O'CLOCK P.M. MONDAY IS THE LATEST TIME FOR RECEIVING "WANT" ADVERTISEMENTS.

OFFICE: 6, GREAT NEW STREET, FETTER LANE, E.C.

Complete List of Contracts Open—continued.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
ROADS AND CARTAGE—cont.			
June 24	St. Neots—Granite and Slag	Urban District Council	J. Edey, Surveyor, South Street, St. Neots, Hunts.
" 24	Lavenshulme, Lancs.—Street Works	Urban District Council	J. Jepson, Surveyor, Guardian Chambers, Tiviot Dale, Stockport.
" 25	Lewes—Road Rolling	Town Council	Borough Surveyor's Office, Town Hall, Lewes.
" 25	Somerton—Hire of Rollers	Langport R.D.C.	I. J. Goode, Surveyor, District Surveyor's Office, Somerton.
" 25	Higham Ferrers—Tar Paving .. .. .	.. .. .	Clerk, 142 Queen Street, Rushden.
" 25	Ticehurst—Hire of Steam Rollers	Rural District Council	F. T. Johnson, Surveyor, Etchingham.
" 27	Braintree—Granite	Urban District Council	H. H. Nankivell, Vestry Hall, Braintree.
" 27	Burgess Hill, Sussex—Flints	Urban District Council	Clerk to the Council, Burgess Hill, Sussex.
" 27	Burnaston—Levelling, &c.	Corporation of Burton-on-Trent	G. T. Lynan, Engineer, Town Hall, Burnaston.
" 27	East Stonehouse, Devon—Stone	Urban District Council	F. A. Wibley, Surveyor, Town Hall East Stonehouse, Devon.
" 27	Otley, Yorks—Kerbing, &c.	Urban District Council	J. E. Sharp, Surveyor, Council Offices, Otley.
" 27	Pelaw—Paving, &c.	Felling Urban District Council	Surveyor, Council Buildings Felling, R.S.O., co. Durham.
" 29	Braintree—Kerbing	Urban District Council	H. H. Nankivell, Vestry Hall, Braintree.
" 29	Woking—Kerb	Urban District Council	G. J. Wooldridge, Surveyor, Bank Chambers, Woking.
" 29	Sutton—Repairs to Tar Paving	Metropolitan Asylums Board	W. T. Hatch, Chief Engineer, Sutton.
" 30	Gateshead—Paving, &c.	Corporation	J. Bower, Engineer, Town Hall, Gateshead.
" 30	Ramsgate—Making up	Town Council	Borough Surveyor, Albion House, Ramsgate.
SANITARY:			
June 23	Witney, Oxon.—Drainage Works	Rural District Council	H. H. Humphreys, 28 Victoria Street, Westminster.
" 23	Botosani, Roumania—Sewerage Works .. .. .	.. .. .	Municipality of Botosani, Roumania.
" 23	Whitchurch—Drainage	Whitchurch Schools	G. Bennett, Newbury Street, Whitchurch.
" 23	Hexham—Pipe Sewers, &c.	Rural District Council	J. E. Parker, Engineer, Post Office Chambers, Newcastle-on-Tyne.
" 23	Leicester—Main Sewer	Highway & Sewerage Committee	E. G. Mawbey, Engineer and Surveyor, Town Hall, Leicester.
" 27	Witham—Sewer	Urban District Council	W. P. Perkins, Surveyor, District Council Offices, Witham.
" 27	Clay Cross—Sewerage Works	Urban District Council	H. W. Taylor, St. Nicholas Chambers, Newcastle-on-Tyne.
" 27	Altofts, Wakefield—Scavenging	Urban District Council	J. C. Coates, District Council Offices, Altofts.
" 28	Alford—Removing Refuse	Urban District Council	J. E. H. Sergeant, Clerk to the Council, Alford.
" 28	Abbots Langley—Sewerage Works	Watford Rural District Council	E. Lailey, 9 Market Street, Watford.
" 28	London, S.E.—Sewer	London County Council	M. Fitzmaurice, County Hall, Spring Gardens, S.W.
" 28	Watford—Sewerage Work	Rural District Council	E. Lailey, 9 Market Street, Watford.
" 29	London, N.—Sewers	Hendon R.D.C.	J. A. Webb, Engineer to the Council, Stanmore.
" 29	Sutton—Surface Water Drainage	Metropolitan Asylums Board	W. T. Hatch, Chief Engineer, Sutton.
TIMBER:			
June 23	Belfast—Hardwood	Gas Committee	Gasworks, Belfast.
" 27	Surbiton—Oak Fencing, &c.	Urban District Council	S. Mather, Surveyor to the Council, Surbiton.

List of Competitions Open.

DATE OF DELIVERY.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	DEPOSIT REQUIRED FOR CONDITIONS, &c.	FROM WHOM PARTICULARS MAY BE OBTAINED.
June 30	Peterborough—Library	£50, £25, £15.	£1	W. Mellows, Town Clerk, Peterborough.
July 2	Bury St Edmunds—Alterations to Shire Hall	£50 £30, £20.	£1	A. A. Hunt, County Architect, Sudbury, Suffolk.
" 30	Aberystwyth—Public Library	£30, £15.	£1 1s.	A. J. Hughes, Town Clerk, Aberystwyth.
" 31	Grantham—Church .. .. .	.. .. .	.. .. .	Rev. H. H. Surgey, Wyville House, Dudley Road, Grantham.
Aug. 15	Whitehaven—Public Library	£30 and £20.	£1 1s.	T. Brown, Town Clerk, Town Hall, Whitehaven.

Tenders.

Information from accredited sources should be sent to "The Editor" at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Addressed postcards on which lists of tenders may be stated will be sent post free on application to the Manager, BUILDERS' JOURNAL, 6, Great New Street, Fetter Lane, E.C.

Aughton.—For the erection of billiard-room, &c., for Mr. T. W. Frost. Mr. J. H. Havelock-Sutton, architect, 101, Dale Street, Liverpool. Quantities by architect:—
Haigh & Co. £1,643 0 0
J. Henshaw & Sons 1,550 0 0
W. Corkhill 1,478 0 0
W. Hall & Son, Ltd. 1,400 0 0
J. & G. Chappell 1,392 15 0
J. Whittle,* Ormskirk 1,310 0 0
* Accepted.

Belfast.—For the building of a new kitchen at main building of workhouse, for the Guardians. Messrs. Young & Mackenzie, civil engineers:—
Lowry & Percy £2,095 0 9
McCammond & Son 1,625 0 0
J. A. Gordon 1,675 0 0
J. Kidd 1,682 10 0
McRoberts & Armstrong 1,825 0 0
McIntyre Brothers 1,918 11 0
W. Dowling,* Belfast 1,450 0 0
* Accepted.

Brentwood (Essex).—For the erection of auction mart, The Parade. Mr. Hugo R. Bird, architect, St. Thomas's Gate, Brentwood:—
S. Parmenter £429 16 0
W. Harbrow, London 423 0 0
E. Dix 420 0 0
F. W. Jarvis 384 0 0
F. W. Burtwell* 355 0 0
* Accepted. [Rest of Brentwood.]

Brentwood (Essex).—For the erection of brigade hall, The Parade. Mr. Hugo R. Bird, architect, St. Thomas's Gate, Brentwood:—
W. Harbrow, London £432 0 0
S. Parmenter 424 16 0
E. Dix 409 0 0
F. W. Jarvis 395 0 0
F. W. Burtwell* 395 0 0
* Accepted. [Rest of Brentwood.]

Chelsfield (Kent).—For additions and alterations to the "Bull's Head," Pratt's Bottom. Mr. G. St. Pierre Harris, architect and surveyor, 8, Ironmonger Lane, E.C., and Orpington:—

T. W. Grady £895 0 0
E. Martin & Son 875 0 0
H. Somerset & Son 848 0 0
R. A. Lowe 789 0 0
C. Walner 772 0 0
W. Owen 749 7 0
Stebbing & Pannett 738 0 0
W. Hodges* 795 0 0
* Accepted.

Chislehurst (Kent).—For additions to a private residence and external works. Mr. G. St. Pierre Harris, architect and surveyor, 8, Ironmonger Lane, E.C., and Orpington:—

T. Rider & Son £809 0 0
B. J. White & Son 645 0 0
R. A. Lowe 624 18 0
Stebbing & Pannett* 452 0 0
* Accepted for additions only.

Cranham (Essex).—For additions, alterations to and restoration of Cranham Hall, Essex, for Mr. James Herbert Benyon, Englefield, Reading. Mr. Robert H. Browne, architect, Brentwood and Ingatstone:—
Ernest Dix, Brentwood £620
F. W. Burtwell,* Brentwood 575
* Accepted.

Gloucester.—For the erection of workshops and alteration of the showroom at their offices, Eastgate Street, for the directors of the Gloucester Gaslight Co. Mr. W. B. Wood, architect:—
Byard & Sons, Stroud Road £1,550 0 0
W. Jones, Worcester Street 1,428 0 0
J. Gurney, Barton Street 1,421 0 0
A. King & Sons, Russell Street 1,336 0 0
Freeman & Jones, Sherbourne Street 1,311 4 0
T. J. Williams, Bristol Road 1,303 5 8
E. Clutterbuck, Whitfield Street 1,282 15 0
Walters & Son, St. Andrew's Road, Montpellier, Bristol 1,274 0 0
A. J. Dolman, Ryecroft Street 1,269 5 0
W. Nicholls, 10, St. Paul's Road 1,249 0 0
J. Simmonds,* Conduit Street 1,179 0 0
* Accepted. [Rest of Gloucester.]

Leyton (Essex).—For making-up, paving and kerbing certain private streets within their district, for the Leyton Urban District Council. Mr. William Dawson, M.I.C.E., surveyor:—
G. Harber, Rutland Road, East Ham £13,869 10 0
W. H. Wheeler, 235, Blackfriars Road, S.E. 12,484 6 0
W. Griffiths & Co., Ltd., 39, Hamilton House, Bishopsgate Street, E.C. 10,620 11 0
T. Adams, Wood Green, N. 10,253 2 11
A. W. Porter, 45, Capworth Street, Leyton 9,973 4 7

G. J. Anderson, 26, North Street, Poplar £9,964 0 4
J. Jackson, Broadway, Plaistow 9,445 9 0
W. Manders, Lindley Road, Leyton 8,834 6 4
[Surveyor's estimate, £9,650.]

London, W.C.—For the erection of casual wards and receiving workhouse at Sheffield Street and Portsmouth Street, for the Guardians of the Poor of the Strand Union. Mr. A. A. Kekwich, architect, 18, Outer Temple, W.C.:—

J. F. Holliday £31,000
Leslie & Co. 29,735
Wells & Co. 29,561
Appley & Sons 28,790
W. Wallis 28,400
Foster Brothers 28,376
Lawrence & Sons 28,292
Treasure & Son 27,597
F. G. Minter 27,596
H. L. Holloway 27,430
A. Monk,* Lower Edmonston 26,739
Page & Son 26,300
* Accepted.

Lower Broughton (Manchester).—For the erection of bakery, &c., in Tolson Street, for Mrs. S. Parker, Mr. A. Vernon Roberts, architect. Quantities by architect:—
Bradley & Lonsdale £619
W. Briggs 595
W. D. Scott* 570
* Accepted. [All of Manchester.]

Manchester.—Accepted for the erection of bakery, &c., Hamilton Street, N.W., for Mr. S. Turner. Mr. A. Vernon Roberts, architect:—
W. Briggs, Manchester £420

Nansbury (Herts).—For electric wiring and fittings at Napsbury Asylum, near St. Albans, for the Visiting Committee. Mr. W. H. Massey, M.I.C.E., engineer, 25, Queen Anne's Gate, Westminster:—
Hampton & Sons £11,955 0 0
F. Suter & Co., Ltd. 9,274 0 0
Wippell Brothers & Row 8,000 0 0
Allom Brothers 7,769 14 0
Comyn Ching & Co. 7,700 0 0
Simmonds Brothers, Ltd. 7,438 0 0
Strode & Co. 7,287 0 0
D. Hulet & Co., Ltd. 7,062 0 0
Wenham & Waters, Ltd. 6,549 0 0
W. J. Fryer & Co. 6,163 0 0
Belshaw & Co. 6,000 0 0
Wells, Rayner & Co.* 5,343 0 0
H. H. & J. Pearson, Ltd. 5,022 0 0
T. Potter & Sons 4,496 0 0
Jones & Spence 3,200 0 0
* Accepted.

Margaretting (Essex).—For erection of loose boxes, motor-house, gardener's and coachmen's rooms at Sunny-side, for Mr. John S. Sheldrick. Mr. Robert H. Browne, architect, Brentwood and Ingatstone :—
Ernest Dix, Brentwood £339 0 0
Charles Jennings,* Margaretting .. 328 7 0
* Accepted.

Plymouth.—For the erection of a villa residence, Bainbridge Avenue, Vinstone, Plymouth. Mr. E. Coath Adams, architect, Bedford Chambers, Plymouth. Quantities by Mr. S. W. Haughton, 22, Courtenay Street, Plymouth :—
Palk & Son £1,632
J. Partridge 1,535
J. Crockerell 1,463
Wakeham Brothers 1,350
E. B. Turpin 1,360
[All of Plymouth.]

Ryde (Isle of Wight).—For the reconstruction of a portion of the Promenade Pier, for the Ryde Har Co. Mr. Theodore R. Saunders, C.E., engineer, Belgrave Chambers, Ventnor :—
J. Shelbourne & Co. £13,220 0 0
London and Tilbury Lighterage, Contracting and Dredging Co., Ltd. 10,925 6 1
J. Cocrane & Sons 8,730 0 0
A. Fasey & Son 8,567 10 3
F. Bevis 8,495 0 0
Mayoh & Haley 7,845 9 2
W. Rigby 7,487 0 0
W. A. Baker & Co., Ltd. 7,443 5 0
A. Thorne 7,381 13 0
F. Grace,* Southampton 7,035 0 0
* Accepted.

Shenfield (Essex).—For the erection of a house and stables, Priest's Lane, for Messrs. R. G. Shilton. Mr. Robert H. Browne, architect, Brentwood and Ingatstone :—
Dowsing & Davis, Romford £1,305
F. W. Jarvis 1,184
F. W. Burtwell 1,140
I. Willmott, Ilford 1,079
E. Dix* 1,025
* Accepted. [Rest of Brentwood.]

Shenfield (Essex).—For works of drainage to farm-house and four cottages, for Messrs. Ripplin & Rake, 33, Cheapside. Mr. Robert H. Browne, architect, Brentwood and Ingatstone :—
F. W. Jarvis £98
C. Anderson* 96
* Accepted.

St. Mary Cray (Kent).—For the erection of a pair of cottages at Sheepcote. Mr. G. St. Pierre Harris, architect and surveyor, 8, Ironmonger Lane, E.C., and Orpington :—
R. A. Lowe £778 0 0
T. Knight 609 0 0
Somerford & Son 572 0 0
A. Pannett* 495 10 0
J. Smith† 389 0 0
* Accepted. † Withdrawn.

Coming Events.

Wednesday, June 22.
GEOLOGICAL SOCIETY.—Meeting at 8 p.m.
BUILDERS' FOREMEN AND CLERKS OF WORKS' INSTITUTION.—Half-yearly Meeting of the Directors at 8 p.m.
Thursday, June 23.
SOCIETY OF ANTIQUARIES.—Meeting at 8.30 p.m.
Saturday, June 25.
JUNIOR INSTITUTION OF ENGINEERS.—Visit to Generating Station, Underground Electric Railways Co. of London, Lots Road, Chelsea, at 3 p.m.
EDINBURGH ARCHITECTURAL ASSOCIATION.—Annual Excursion to Glamis Castle and Restenneth Priory.
ARCHITECTURAL ASSOCIATION.—Third summer visit.
Thursday, June 30.
SOCIETY OF ANTIQUARIES.—Meeting at 8.30 p.m.

New Companies.

WALTER MARK & CO., LTD., builders, contractors, &c., West Norwood. Capital : £8,000 in £1 shares.
W. J. FRASER & CO., LTD., mechanical and consulting engineers, &c., 93, Commercial Road, London. E. Capital : £20,000 in £1 and £100 shares.

Bankruptcies.

[Abbreviations: R.O.—receiving order; P.E.—public examination; C.C.—county court; O.R.—official receiver; Adj.—Adjudication.]
DURING THE WEEK ending June 17th twenty-three failures in the building and timber trades in England and Wales were gazetted.

W. J. CRONK, builder, Croydon. Adj. June 10th.
T. FARR, builder, Pontypridd. R.O. June 10th.
J. THOMAS, builder, Pontardawe. R.O. June 8th.
G. F. WIGLEY, builder, West Dulwich. Adj. June 6th.
R. JOHNSON, plumber and ironmonger, Morpeth. P.E., Newcastle C.C., July 14th, at 11.
H. CULLIFORD, road contractor, Ash, Somerset. P.E., Yeovil Town Hall, July 7th, at 12.
J. G. CULLINGFORD, builder, Horley, Surrey. R.O. June 7th.

CURTIS & WEAVER, builders, Westminster. R.O. May 18th.
J. WHITE, builder, Crediton. R.O. June 10th. First meeting, O.R.'s, Exeter. June 23rd, at 10.30. P.E., The Castle, Exeter, same day, at 11.30.
C. PORTON, builder, Walthamstow. R.O. June 8th. First meeting, London Bankruptcy Court, June 22nd, at 2.30. P.E., same, July 29th, at 11.30.

JAMES BLACK & SON, joiners and builders, Manchester. R.O. June 6th. First meeting, O.R.'s, Manchester, June 24th, at 2.30. P.E., Manchester C.C., July 8th, at 10.
G. COLLIER, painter and house decorator, Great Grimsby. First meeting, O.R.'s, Grimsby, June 22nd, at 11. P.E., Grimsby Town Hall, July 7th, at 11.

W. J. NADIN, builder and decorator, Worthing. R.O. June 9th. First meeting, O.R.'s, Brighton. June 30th, at 10.30. P.E., Brighton C.C., same day, at 11.
J. BOWSER, builder, Leeds. R.O. June 9th. First meeting, O.R.'s, Leeds, June 22nd, at 11. P.E., Leeds C.C., July 12th, at 11.

S. BROWN, builder, Sheffield. R.O. June 8th. First meeting, O.R.'s, Sheffield, June 23rd, at 12. P.E., Sheffield C.C., same day, at 2.
R. STEVENS, builder, Carlton, Huthwaite, near Thirsk. R.O. June 9th. First meeting, O.R.'s, York, June 23rd, at 3. P.E., York Courts of Justice, July 1st, at 11.

G. HANCOCK, builder and contractor, Merthyr Vale P.E. (adjourned), Merthyr Tydfil Town Hall, July 27th at 3.
MOORE & SONS, surveyors, estate agents, &c., East Molesey. First meeting, 24 Railway Approach, London Bridge, June 22nd, at 11.30. P.E., Kingston C.C., July 12th, at 3.30.

The Silchester Excavations have been carried on for fourteen years, and the annual display may now be seen (free) in the rooms of the Society of Antiquaries until the end of this week. The area of 100 acres enclosed within the city walls reveals the main lines and many of the foundations of the buildings, public and private, which were standing fifteen hundred years ago and marked the city as an important agricultural and commercial centre of Roman Britain.

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Current Market Prices.

	£	s.	d.	£	s.	d.
METALS.						
Copper, sheet, strong ..	per ton	69	0	0	—	—
Iron, Staffs, bar. ..	do.	5	17	6	8	0
Do. Galvanised Corru- gated sheet ..	do.	10	2	6	10	7
Lead, pig, Soft Foreign ..	do.	11	6	3	11	8
Do. do. English common brands ..	do.	11	15	0	—	—
Do. sheet English 3lb. per sq. ft. and upwards ..	do.	14	0	0	—	—
Do. pipe ..	do.	15	0	0	—	—
Nails, cut clasp, 3in. to 6in. Do. floor brads ..	do.	9	0	0	—	—
Steel, Staffs., Girders and Angles ..	do.	5	15	0	6	5
Do. do. Mild bars ..	do.	6	0	0	6	5
Tin, Foreign ..	do.	118	0	0	118	10
Do. English ingots ..	do.	120	0	0	122	0
Zinc, sheets, Silesian ..	do.	24	10	0	—	—
Do. do. Vieille Montaigne Do. Spelter ..	do.	24	15	0	22	2
	do.	21	15	0	22	6

TIMBER.						
SOFT WOODS.						
Fir, Dantzic and Memel ..	per load	1	13	0	3	0
Fine, Quebec, Yellow ..	do.	5	5	0	6	5
Do. Pitch ..	do.	2	5	0	3	0
Laths, log, Dantzic ..	per fath.	4	10	0	5	10
Do. Norrköping ..	per bundle	0	0	7½	—	—
Deals, Nyhamn, White, 5th, 3x9 ..	per std.	6	0	0	—	—
Do. Galatz, White, 3rd, 3x9 ..	do.	8	10	0	—	—
Do. do. do. 4th, 3x11 ..	do.	6	10	0	—	—
Do. Libau, Yellow, 2nd, 2nd and 3rd, Unsorted, 3x9 ..	do.	9	0	0	—	—
Do. do. do. 3x8 ..	do.	8	5	0	—	—
Do. do. do. 3x7 ..	do.	7	10	0	7	15
Do. Umba, Yellow, 2nd, 3x7 ..	do.	9	10	0	—	—
Do. do. do. 3rd, 3x7 ..	do.	8	15	0	—	—
Do. Süderhamn, Yellow, 5th, 3x9 ..	do.	7	10	0	7	15
Do. Kola, Yellow, 3rd, 3x9 ..	do.	10	10	0	—	—
Do. do. 4th, 3x9 ..	do.	8	15	0	—	—
Do. Quebec, Spruce, 3rd, 3x9 ..	do.	8	15	0	—	—
Do. Montreal, Yell. Pine, 1st, 3x8 ..	do.	22	0	0	—	—
Do. do. do. 3x8 ..	do.	21	0	0	—	—
Do. do. Red Pine, 1st, 4x11 ..	do.	16	10	0	16	15

Battens, all kinds ..	do.	£	s.	d.	£	s.	d.
Scantlings ..	do.	6	5	0	12	5	0
Flooring Boards 1in. pre- pared, 1st ..	per square	0	10	0	0	11	9
Do. 2nd ..	do.	0	9	6	0	9	9
Do. 3rd, &c. ..	do.	0	6	9	0	8	3

Keystones.

Messrs. R. Waygood & Co., Ltd., have declared a dividend of 9 per cent. for the past year.

Change of Address.—Mr. William B. Whitie, architect, has removed from 196 to 219, St. Vincent Street, Glasgow.

Burton Hall, Cheshire, illustrated in our issue for May 25th, is being built for Mr. Henry N. Gladstone, not Mr. Herbert Gladstone, as stated.

The Mural Tablet to the Memory of the late Mr. F. C. Penrose, erected by the Royal Institute in the crypt of St. Paul's Cathedral, was unveiled on Saturday by Sir Lawrence Alma-Tadema.

At last week's meeting of the Society of Antiquaries Mr. E. P. Warren read some notes on a bridge over the old mill-stream of Westminster Abbey, which ran from the Thames to Dean's Yard. Remains of the bridge were found during the recent demolition of buildings in Great College Street, and piles that formed the banking of the stream were also uncovered.

Correction.—In the summary of the case of *Brown v. Welch* given on p. 279 of our issue for last week the word "no" was omitted, through a printer's error: the paragraph should read as follows:—Judge Lumley Smith has decided that a carpenter's shop where no mechanical power is used is not a "factory" within the meaning of the Workmen's Compensation Act.

Fire Resistance.—The directors of the Alhambra are having the ceilings and partitions of the boxes reconstructed, and in order to render them secure against fire they are using fire-resisting Compoboard, made of non-flammable wood, which has so often been proved to possess extraordinary fire-resisting qualities.

Examples of Lancastrian Pottery.—Some most delightful pottery made by Messrs. Pilkington, Ltd., of Clifton Junction, near Manchester, is on exhibition till June 25th at Messrs. Graves' gallery, 6, Pall Mall, London. Vases, pots and plates of all sizes and shapes are shown, glazed in wondrous ways—crystalline, opalescent, flamed, transmutation and texture glazes—sparkling, mottled, veined, clouded—all kinds, and many of exceptional beauty. This is not the trade potter's art, nor the art-crank's, but the work of men with a love of experiment and a sympathy with the changeable possibilities of the kiln.

School of Decorative Painting, Manchester.—In connection with this school (which is under the auspices of the National Association of Master House-Painters and Decorators of England and Wales) the Wallpaper Manufacturers, Ltd., offer five scholarships, each of the value of £20, tenable at the school during the 1904-5 session, commencing October 4th next and terminating March 31st, 1905. The scholarships are divided as follows:—England and Wales, three; Scotland, one; Ireland, one. They are open to any boy between eighteen and twenty-one engaged in the house-painting and decorating trade. Names of intending competitors must be sent in to the secretary of the committee, on a form to be obtained from him at 26, Oxford Road, C.-on-M., Manchester, not later than July 1st, who will then submit to them the details of the competition.

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THE BUILDERS' JOURNAL

AND ARCHITECTURAL RECORD.

June 29, 1904. Vol. 19, No. 490.

6, Great New Street, Fetter Lane, E.C.

Summary.

The Government hope to come to an arrangement with the town authorities for the preservation of the ancient walls of Berwick. (Page 308.)

In their reply to the criticism on the plenum system of ventilation passed at the Institute meeting Messrs. Henman & Cooper and Messrs. Henry Lea & Son say that air at a high temperature forced along small ducts and through buildings by high-speed fans cannot as regards efficiency be compared with the low temperature, spacious ducts and slow-speed fans adopted at the Victoria Hospital, Belfast, where the temperature does not exceed 62 degs. or 63 degs. Fahr. It was found that 100-h.p. would be necessary for working on the "high-pressure method" at Belfast, whereas the ventilation is successfully accomplished by $5\frac{1}{4}$ -h.p. on the "low-pressure method." (Page 309.)

Mr. Howard Colls has been presented by the Society of Architects with a resolution engrossed on vellum expressing appreciation of his public spirit in his recent "ancient lights" case against Home and Colonial Stores, Ltd. The R.I.B.A. has also expressed its cordial recognition of the service rendered by Mr. Colls. (Page 309.)

An action for fees was recently brought by a firm of London architects against the Aldershot Urban District Council in respect of a new board school. The Council had taken over the work from the school board, whose plans they tried to set aside in favour of new ones proposed to be drawn in their own surveyor's offices. The judge, however, said they were morally bound to pay. Judgment for the architects for £500, with costs. (Page 309.)

The Frimley Sanatorium for Consumption, which has been erected from Mr. E. T. Hall's designs, provides accommodation for 100 patients in forty-eight single wards, eight double, and twelve for three beds. (Page 307.)

Some good examples of work by the students at the L.C.C. school for cabinet-makers were exhibited last week, proving the school to be thoroughly efficient. (Page 314.)

A committee of civil engineers appointed by the Roads Improvement Association recommends the establishment of a central department to deal with trunk roads; no new buildings to be erected within 50ft. of the centre of the road. (Page 309.)

An architectural draftsman named Francis Harwood was found dead at his lodgings in Bloomsbury last week. (Page 314.)

The huge new hospital now being erected in Vienna will comprise forty buildings and will form quite a town in itself. (Page 312.)

Sir Henry Tanner. THE daily press might have been a little better informed about Sir Henry Tanner when commenting upon his work as principal architect to the Office of Works. The "Telegraph," the "Morning Post" and several other papers made a double blunder in calling him the designer of the new Government offices in Great George Street, while the "Times" confused him with Sir Walter Plummer, M.P. Though the new Local Government Board offices will eventually extend to Storey's Gate, the huge block now being built barely reaches into Great George Street; it fronts Parliament Square and Parliament Street; and its designer was the late lamented Mr. Brydon, after whose death it will be remembered there was considerable outcry because the work of completion had been placed in the hands of the Office of Works. We are glad the profession has been again recognized by the knighthood conferred on Mr. Tanner, though we recall one or two architects more deserving of the honour. Of the other names in the Birthday List there are only two associated with art and architecture, namely, Mr. George Donaldson (now a knight), who represented Great Britain as vice-president of the International Jury at the Paris Exhibitions of 1889 and 1900, and has rendered service in matters of art collections; and Mr. Henry Cousens, superintendent of the Archæological Survey, Bombay, on whom the Kaiser-i-Hind Medal of the First Class has been conferred.

Liverpool Cathedral Foundations. SOME unwarrantable suggestions are being made about the Liverpool Cathedral foundations by Mr. Thomas Pritchard, of Hamilton Road, Liverpool, who has sent a sample of the concrete footings of the foundation-stone to one of the London dailies, saying that if the specimen is examined under a microscope rounded grains of sand may be observed, their shape being evidence of the action of water and of faults and fissures due to the shrinkage of the stratum by loss of moisture. "It would be disastrous," he adds, "if the Liverpool Cathedral should prove to be a repetition of Truro Cathedral in regard to its foundations, and I am informed by a geologist to whom I have submitted the specimen that the character of the stratum is not capable of sustaining heavy weights without becoming further fractured. It is desirable that the cathedral authorities should obtain the highest geological opinion on the foundations before they have proceeded too

far with the work, as a mistake discovered at an early stage could be rectified at a slight cost compared with the cost of remedying so serious a mistake as bad foundations at a later period when the building had been completed." Mr. Pritchard should have been more moderate and not endeavoured to work up public excitement by his speculative assumption and ignorance of constructive principles. The foundations at Truro are not faulty, while as to water-worn grains of sand, it is foolish to draw conclusions from these about shrinkage in the stratum, &c., for in all deposited stratified sandstone the grains are naturally rounded. Of course local faults may exist by reason of which, under pressure and difference in compressibility of underlying material, there may be risk of unequal settlement, but an architect would be sure to satisfy himself of this. Foundations should be designed to give equality of pressure by varying their width in the different parts according to the stresses to be sustained. Experts may be left to deal with such everyday matters of constructive science, and not be harassed by interfering letter-writers to the daily press.

L.C.C. Works. THE Works Committee of the London County Council have just presented their statement as to the financial result of works completed by them for the half year ended March 31st last. The committee observe that they are glad to be in a position again to present a statement which must be regarded as satisfactory, the nett result of the execution of the works included being a balance of cost below the final certificate of £5,760, or nearly 6 per cent. on the total of the final certificates, twelve out of the thirteen works having been carried out at a cost below final certificate. In one case only, that of the construction of a sewer at Balham, is there an excess of cost over final certificate, amounting to £1,573. The result of the execution of jobbing works by the Department during a part of the year 1903-4 is a balance of cost below schedule value of £1,271. The committee point out that the total costs of the works included in the statement now presented did not represent the turnover of the Department, because much of the expenditure on these works occurred previous to the half year in question, while, on the other hand, much of the expenditure during the six months was upon works which were still unfinished. The approximate expenditure on works executed during the half year was £232,000.



BETWEEN THE ETRUSCAN AND MEDIAEVAL WALLS, VOLTERRA. DRAWN BY F. HAMILTON JACKSON, R.B.A.

BY-WAYS OF ITALY.

Volterra.

By F. HAMILTON JACKSON, R.B.A.

(Concluded from p. 281, No. 488.)

VOLTERRA is a most ancient city, having been one of the capitals of middle Etruria. It has the largest and best preserved circuit of Cyclopean walls of all the Etruscan capitals. It is situated on the summit of a mountain which rises above the surrounding hills, 1,900ft. above the sea, and the road from San Gimignano (which is a hill road) ascends continuously for the last two miles, while it is five miles of continuous descent to Le Saline, where the nearest railway station is situated. At the foot of the hill run the rivers Cecina and Era.

The stones of the wall are sometimes as much as 16ft. long by 2ft. or 3ft. high; the material is called "panchina," a kind of yellow conchiferous limestone. The finest portions are below S. Chiara, where there is a piece 40ft. high and 140ft. long, with square sewer openings having projecting sills 10ft. or 12ft. from the ground. The whole circuit was between four and five miles. One of the ancient gateways is still complete, the Porta all' Arco—two arches united by massive walls 18ft. long and nearly 30ft. from the exterior to the interior. The height to the keystone is about 21½ft. and the span of the arch is 13ft. 2in. Outside are three heads, one on the keystone and the others just above the impost, so much worn away that it is impossible to say who they represented, whether the deities of the city or the three mysterious Cabiri. They are of a dark-grey *peperino*, and the imposts and voussoirs are of travertine. There is a groove for some kind of portcullis within the gate on each side. Of another gateway, called now the Portone or Porta di Diana, there are considerable remains. It was similar in plan, but the inner gate probably had a wooden lintel, since at 12ft. or so from the ground there is a square hole in the masonry at each side of the gate. The approaches are so arranged that an enemy attacking would have the shieldless side exposed to the defenders on the wall.

The baptistery of the cathedral is supposed to date from the seventh century and

to occupy the site of an ancient temple of the sun. The first mention of it occurs in the tenth century and it was restored for the second time in 1283, at which time the present doorway was made. It is octagonal, with small engaged columns in the angles, and the font within, with its statue of the saint, is the work of Andrea Sansovino. The arch of the altar behind is a delicate Renaissance work by Balsamelli, of Settignano, and a ciborium which used to stand on the high altar of the cathedral, one of Mino da Fiesole's less successful works, occupies a niche. Until 1578 the baptistery kept the title of first parish church of the diocese. The cathedral which faces it was consecrated in 1121 by Callixtus II. It was enlarged in 1254, and the façade is of that date. Niccolò Pisano is credited with the design, which shows Pisan influence both in the use of arcading and black-and-white marbles, as do others of the churches. In 1574 the stucco columns of the nave and other "embellishments" were made by Leonardo Ricciarelli. The roof of the nave and transepts was

executed by Francesco Cipriani, known as "da Volterra," in 1570. It has a number of half-length figures of saints in high relief, and painted and gilded, affixed to the panels. The grounds are blue and green and the ornamented mouldings gold and white with a few touches of red. The transepts and crossing are raised on eight steps, and beyond the unlighted dome above the altar is a square-ended apse, the light in which relieves the high altar very effectively. The pulpit has sculptures of the twelfth century, ungraceful in form, and two angels bearing candlesticks by Mino still remain near the high altar. In the south transept is an interesting coloured wooden group of the Descent from the Cross, very Byzantine in feeling but ascribed to the thirteenth century. In the chapel opposite are some pictures—an Annunciation by Luca Signorelli, a Nativity by Benvenuto di Giovanni with predella by Benozzo Gozzoli, and others of less interest. The tower was restored in 1603 and the whole cathedral in 1843: from discoveries made then it is thought that



PORTA ALL' ARCO, VOLTERRA. DRAWN BY F. HAMILTON JACKSON, R.B.A.

there had been two churches at different levels within the present area, the choir and transepts being later than the nave. A semicircle floored with mosaic was found 2ft. or so under the pavement of the presbytery.

The bishop's palace has a fine pointed door beneath a porch of two storeys which gives access to an interesting cloister which also has an upper storey, but without arches, and a well in the centre. This has been the bishop's palace since 1618; it was a public library and offices for grain and taxes, and on part of the site were houses belonging to the chapter. Towards the great piazza the façade has four arcades. Next to it is an entrance to the cathedral, and then comes the Palace of the Priors, founded in 1227 but only completed in 1257, till which time the meetings of the council were held in the cathedral. When the Florentines became masters of Volterra they added two lions, one at each end of the stone bench which runs along the façade, replacing the platform from which proclamation used to be made. It bears many coats-of-arms, but the interior has been modernized to a great extent. The great hall had two large vaulted bays and four windows towards the piazza, which are approached by four steps from within.

A few of the ancient frescoes still exist. On the staircase are a S. Girolamo and a crucifix painted in 1491; in the first room a Madonna and Child and a Crucifixion by Lodovico Fiorentino (1359). In the room now used as a library is an Annunciation with SS. Giusto and Ottaviano (who were Volterranean lawyers) and SS. Cosmo and Damian by Jacopo Orgagna and Nicolò Lamberti (1382-88). The Madonna and angel are in the centre under a rich canopy and the saints are under a pointed arcade. S. Ottaviano holds the town in his hands as being its patron saint. A few pictures have been collected in the building to form a gallery. In the upper room, now the Archivio, is a later Madonna with SS. Giusto and Ottaviano by Cosimo Taddi (1600).

Opposite, on slightly higher ground, is the palace of the podestà, a central tower dating perhaps from the tenth century with additions built against it on each side. An arch is thrown across the street which enters the piazza by it, and high on the tower an archaic lion on a projecting bracket stands at gaze. At the right of it, facing down the piazza, is the Monte di Pietà, on the site of the ancient public granaries. On the left is the ancient palace of the Belforti, with three great pointed arches on the ground floor and rows of six round-arched windows above, of two lights each, with a central colonnette and vousoirs of black and white. The capitals are all different and some are composed of human heads upside down. In the two upper rows the end windows are smaller, deeper and only single lights. The building is now occupied by municipal offices. Next comes the palace of the Malcriazzi with rows of three pointed windows of two lights with trefoiled heads, much like a Siennese palace, only of stone instead of brick. Three lozenge-shaped piercings occur above the ground floor arcades, a frequent form in Volterra. Then comes the post-office with a modern filling of glass set in metal beneath a flat arch, and the towers of the Magalotti and Manetti follow, to which the palace of the Incontri succeeds with an interval of less important houses. This piazza is most impressive at first sight, but scarcely bears out the impression on closer study. In the Via Baldinotti is a house once belonging to the family of that name which has several arcades on the façade and a very curious series of heavy stone hinges on the first floor, which must have been for shutters if not merely a decoration.

There were laws made at the beginning of



BACK OF PALAZZO PUBBLICO, VOLTERRA, AND DESCENT TOWARDS THE PORTA ALL' ARCO.

the thirteenth century to regulate the building of towers by the nobles. In 1260, after Montapert, the bishop Rainieri Ubertini mediated between the Guelphs and the Ghibellines. The principal Guelph towers were then heaps of ruins. In 1279, after the defeat of the Ghibellines, he decreed that they should be rebuilt at the expense of the Commune. The best-known historically are those of the Marchesi and Buonparenti, which a statute of 1368 designated as the objects of special care. The latter is opposite the tower of the Pitti, just outside the piazza to which it was united in the sixteenth century by an arch thrown across the street. Between the Porta all'Arco and the Porta S. Felice is a building known as the Torre degli Auguri. On its doorway is carved an inscription which says that it was made in 1229 for the hospitallers of S. Giacomo di Altopascio, with the mason's name, "Annuccio di Casanova."

The fortress is at the eastern angle of the town, with machicolated walls and two great round towers. The one to the north is called "la Femmina" and was built by the Duke of Athens in 1343 during his two years of power; the other, to the east, is called the "Maschio" and was built by Lorenzo di Medici in 1474—probably the Pazzi conspirators were the first occupants of its dungeon, in 1478: the whole building is now a prison and will accommodate 350 prisoners. Just outside is the "Piscina," a vaulted reservoir with six columns which support horizontal architraves, believed to be Etruscan.

Outside the closed gate of S. Felice some Roman baths were discovered in 1761. The mosaics are now in the museum, where are

also 400 cinerary urns taken from sepulchres near the town. Towards the end of the eighteenth century so many had been found that they were broken up and used for building materials! The subjects represented upon them are of the most various kinds, either from Greek mythology or Etruscan life. Some are of terra-cotta or sandstone, but the major part are of alabaster and show traces of colour and gilding. A few glass vessels, gold ornaments, bronzes, coins, &c., are also to be found in the same building. Outside the Porta S. Francesco in the piazza Prato Marzio is a Roman portrait statue much weather-worn, close by the remains of the twelfth-century church of S. Stefano. In S. Francesco are some indifferent fifteenth-century frescoes, and between this gate and the Porta Fiorentina are traces of an amphitheatre. The house of Daniel da Volterra, Michael Angelo's pupil, is in the Via Ricciarelli, still belonging to the family.

Volterra is first mentioned by Dionysios Halicarnassos, who says that with Clusium, Arretium, Rusellæ and Vetulonia it assisted the Latins against Tarquinius Priscus, independently of the rest of Etruria. In B.C. 298 L. Cornelius Scipio encountered the Etruscan forces below the city, who defended themselves with great obstinacy till night. Daylight showed that they had retired from their positions and that the Romans were victorious. The Etruscan name was "Velathri." It became a Roman "municipio" in 280 B.C. with the right of citizenship. It was on the side of Marius and received his defeated partisans; so Sylla besieged it. It was two years before he succeeded in taking it, and it was then made a military colony.



LANFINE COTTAGE HOSPITAL. JAMES SALMON AND SON, ARCHITECTS.

It [was one of the first Italian cities to recognize the supreme dominion of Charlemagne. It had some association with the great Countess Matilda, proved by two documents in the archives of the bishopric of 1078 and 1107. It is said that she had a palace near S. Andrea di Postierla. The jurisdiction of the bishops was first recognized by Henry VI. towards the end of the twelfth century, when the title of prince was given to Hildebrand Pannocchieschi, who transmitted it to his successors. At this time S. Gemignano belonged to Volterra. He was allowed to coin money, paying an annual tribute of six marks of silver "by the weight of Cologne" to the royal treasury. By the end of the twelfth century Volterra had become a self-ruling commune.

Among the things prescribed by the statute of 1207 were the fashion and height of houses and towers. The "priors," who were the rulers of the town, changing every three months, had to remain in the palace night and day. They could not go out without their colleagues' consent, under a penalty of twenty florins, "nor frequent hosteleries nor taverns." Their twelve colleagues were under the same obligations and never could go out more than two at a time on any pretext. It must have been a cheerful business to be one of the governing body of an Italian mediæval city! In 1340 the family of the Belforti began to disturb the public peace and there were faction fights. In 1361 Bocchino Belforti sold the lordship of the city to Pisa for 32,000 florins of gold. "When the people heard of it they took arms

and first went to the Pisan ambassadors' lodgings, took from them their guard, saddles and bridles, and turned them out of the country, returning them their property when well outside the city." Then they went to the Belforti palace and put the whole family in prison, sent to Florence for a captain of the guard and to Siena for a podestà, and when the Florentines had entered the city five weeks afterwards cut off Belforti's head. This was the commencement of the submission to Florence. In 1427 the Florentines wished to introduce a new system of taxation, but the Volterrans refused to accept it and sent eighteen ambassadors to Florence to protest. The signoria imprisoned them from June 28th, 1427, till December, 1428, when they gave up the assessment books for the purpose of regaining their liberty. On their return the Volterrans rose and one of them, Giusto Landini, headed the rebellion and drove out the Florentine captain and castellan. The signoria immediately took vigorous measures to bring them back to obedience, and the people felt they had gone too far. Sixteen days after the revolt (November 7th, 1429), as soon as Landini entered the Palace of the Priors, where the magistrates were assembled, he was attacked and thrown from the window into the piazza, still breathing; the magistrates crying, "Viva the good state of the city and the friendship of the Commune of Florence."

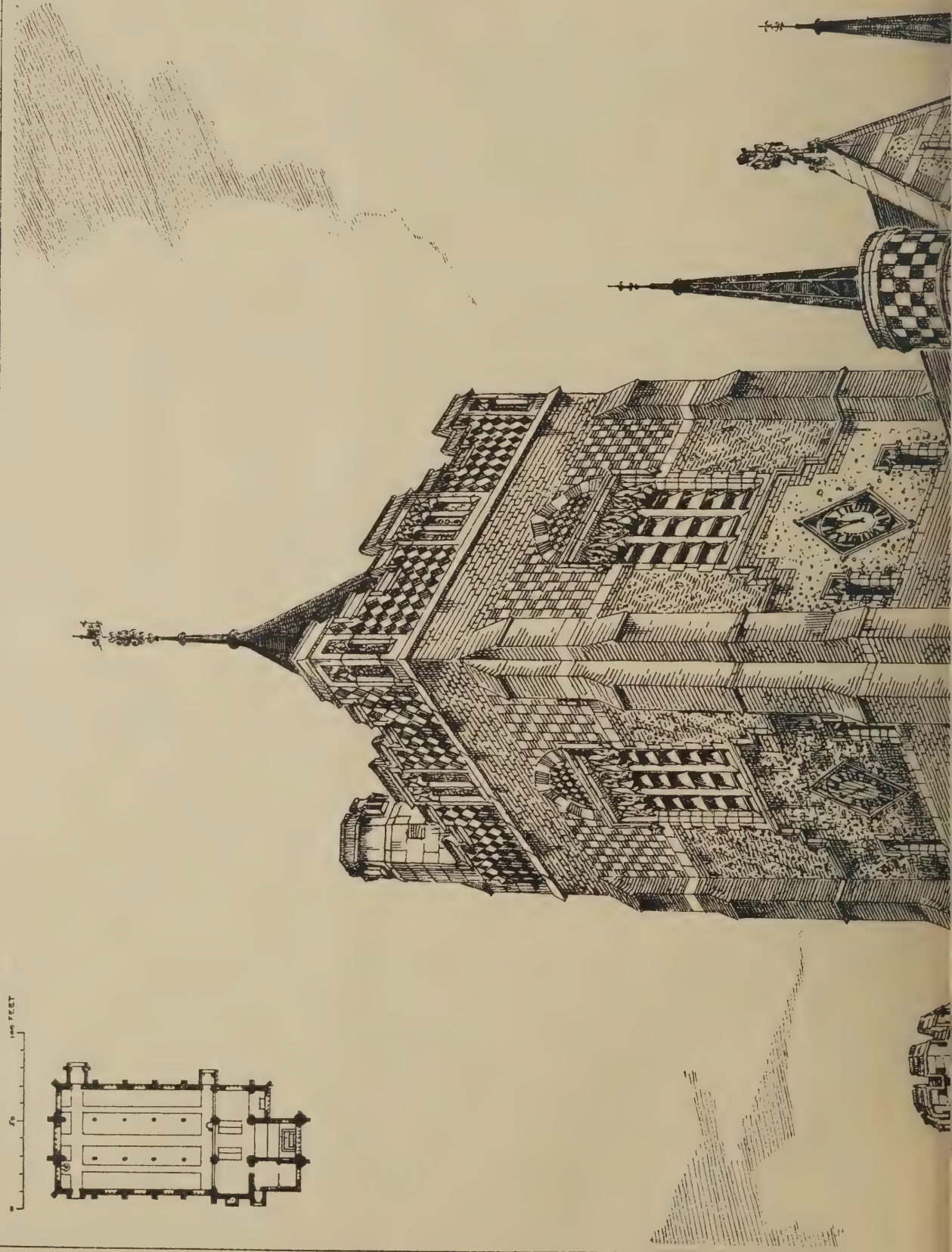
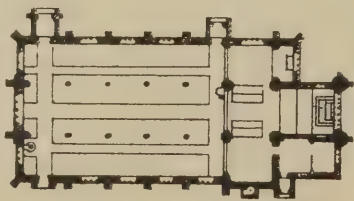
The celebrated "Sack of Volterra" was the result of disputes over the leasing of the alum mines on terms damaging to the

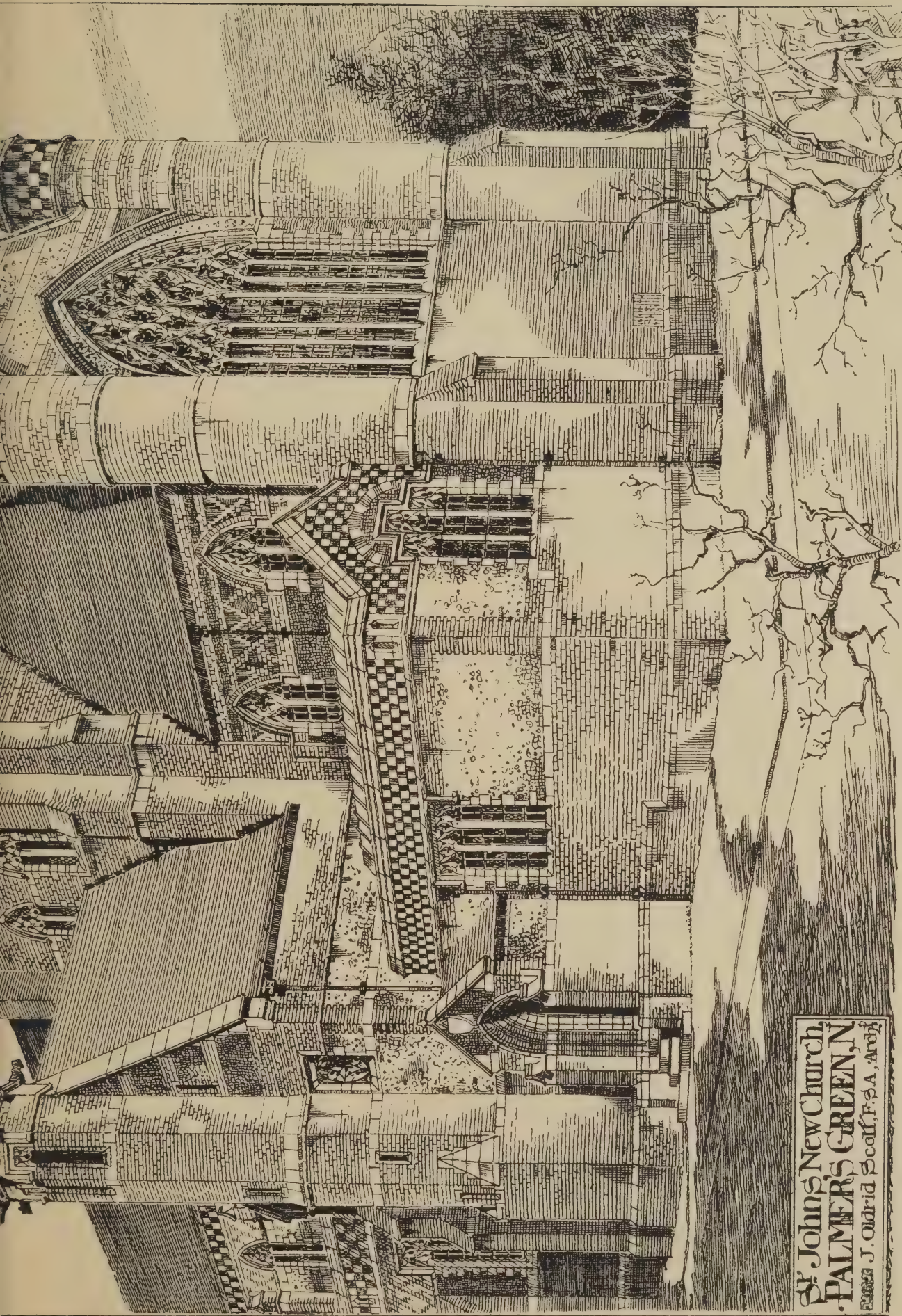
Commune. Paolo di Antonio Inghirami called Pecorino, his brother, Brunaccio Cappaci, Romeo Barlettani and others had obtained what were thought too favourable terms. Inghirami was much hated and the people rose against them. He and his brother Giovanni sought refuge in the palace of the podestà with Romeo Barlettani and others. The doors were broken down, Romeo Barlettani was killed and thrown into the piazza from the top window, Paolo Inghirami who had hidden himself in the tower and defended himself valiantly when discovered was stifled with the smoke of burning straw and his corpse also thrown into the piazza. In the tumults the authority of Florence was set at naught, and Frederick of Urbino, a general of the Republic, attacked the city at the head of a large army. At dawn on June 18th, 1472, the Florentine army entered by treachery through the Porta a Selci, massacring citizens and burning and sacking their houses without paying any attention to the stipulation made a short time before, and despite Frederick's utmost endeavours to protect them. Afterwards seventy-six citizens were exiled, many of the richest and most important inhabitants abandoned the city and took refuge in other towns, and the municipality was deprived of dignities and considerable portion of its revenues—a blow from which it has never recovered. In 1555, as the result of wars and pestilences, it was said to be in the hopeless state of being "almost empty of inhabitants," though it had had its dignities and much of its property returned to it.

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Supplement to
THE BUILDERS' JOURNAL AND ARCHITECTURAL RECORD,
Wednesday, June 29th, 1904.

0 50 100 FEET





St. John's New Church,
PALMER'S GREEN, N.
DESIGNED BY J. Oldrid Scott, F.R.S.A., ARCHT.

(ROYAL ACADEMY EXHIBITION, 1904.)

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LANFINE COTTAGE HOSPITAL.

THIS hospital has been erected in connection with the Broomhill Homes at Kirkintilloch, near Glasgow. The homes are for incurable diseases and the new hospital is intended for incurable cases of consumption only. It has been built about 350ft. west of the homes and is placed on ground which slopes towards the south. There are two wards, each for eight beds, one of the wards being for male patients and the other for women. Glass-roofed verandahs run along the southern sides of the wards. There are two single-bedded wards placed alongside each other and facing north. One of these is provided with a window on the side as well as at the end, and so has some cross-ventilation; but the other has an end window only, hence such cross-ventilation as it may possess must be got by the open door or by a fanlight over the door. The wards contain about 60ft. super. per bed, and, assuming a ceiling height of 12ft., would give nearly 1,100 cub. ft. per bed, which is sufficient for the purpose, as the wards are well cross-ventilated. The hospital part of the building is connected to the nurses' home by a corridor, from the south side of which the entrance porch projects, and on the opposite side is the laundry. The nurses' home is of two storeys, and contains sufficient accommodation compactly and conveniently arranged.

The ward floors are of polished maple, and the walls are finished in Robinson's cement preparatory to being painted. The windows are constructed in two sections, the lower part being a double casement and the

upper a hopper opening by a quadrant. Warming is by open fireplaces supplemented by hot-water radiators under the windows, where fresh air is admitted, foul-air extractors being fixed in the roofs. The outer walls are of brick rough-casted, and built with a hollow space. The roofs are tiled. The cost was £4,000, which sum was generously given by Miss Brown, of Lanfine. The architects were Messrs. James Salmon & Son, of Glasgow.

Bricks and Mortar.

Aphorism for the Week.

Art is not a study of positive reality, but a seeking after ideal truth.—GEORGE SAND.

Our Plates.

ST. JOHN'S NEW CHURCH, PALMER'S GREEN, is being built to supply the needs of an outlying part of Southgate, London, N. The site was given by Mr. R. D. Walker, who has also contributed liberally to the funds. The materials used are brick, stone and flint. The tower placed over the choir will form a conspicuous feature in the neighbourhood. When completed by the addition of the western part of the nave the church will accommodate more than 800 persons. Space has been reserved on the site for a parsonage and parish hall. The cost of the part now in hand, which includes the tower, is about £9,000. The contractors are Messrs. Dove Brothers, of Islington, and the architects Messrs. J. O. Scott & Son, of 2, Dean's Yard, Westminster.—The new court-house and police-station at Bedale, Yorks, is interesting as showing that public authorities are tired

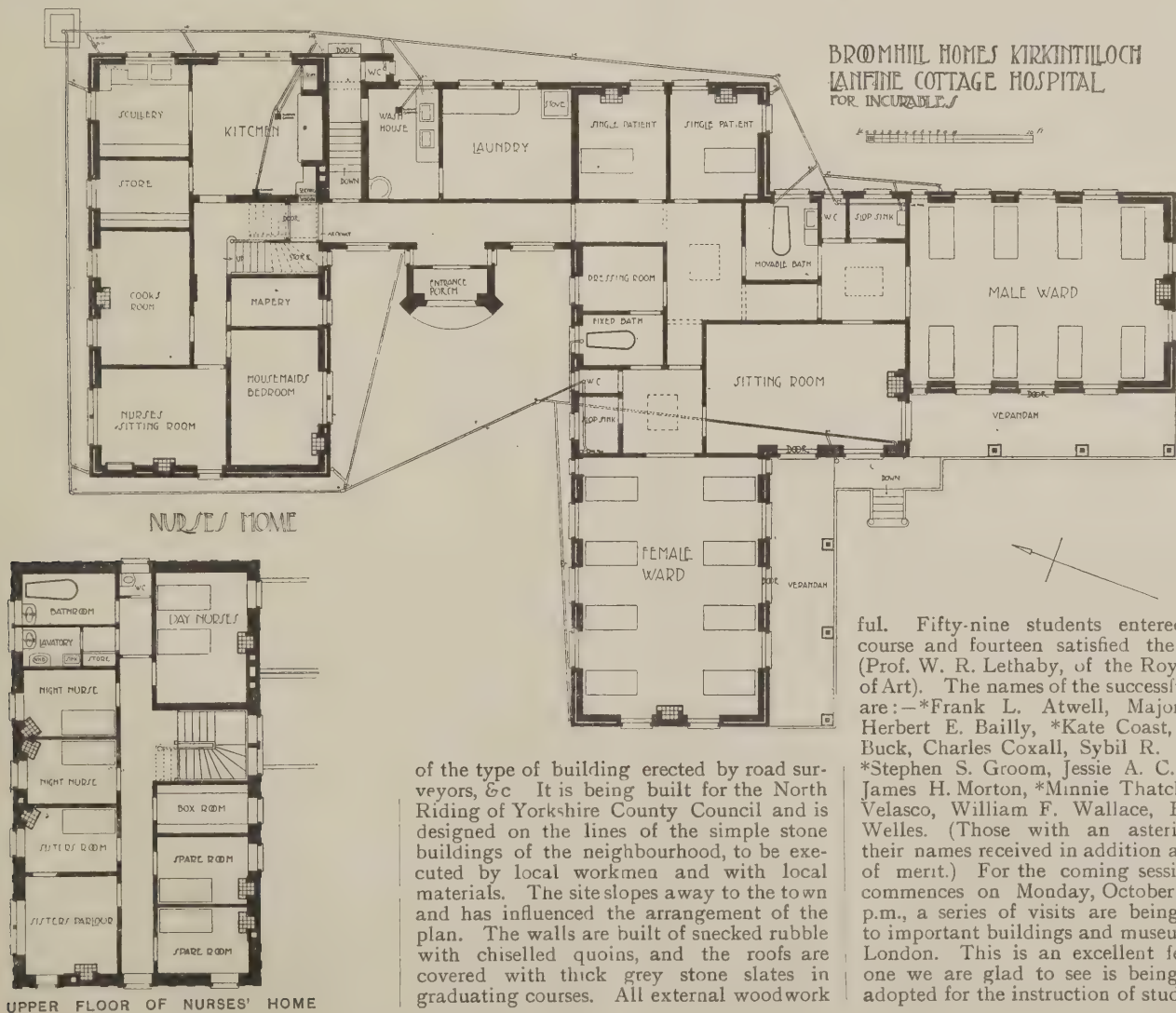
is of oak. Mr. G. F. Wade, of Richmond, is the builder, and Mr. Walter H. Brierley, of York, is the architect.

Frimley Sanatorium.

THE Frimley Sanatorium for Consumption, on the Chobham Ridges, near Bagshot, was opened on Saturday by the Prince of Wales. Mr. Edwin T. Hall, F.R.I.B.A., is the architect. The plan consists of four wings radiating from the corners of a three-storey block in the centre. The wings are two storeys high and the wards face either south, south-south-west or south-south-east, so that all receive plenty of sunlight. In the angles "sunning rooms" have been constructed with windows on three sides. A short distance away from the main buildings are three other structures, one of which is for the doctors and another for the nurses; the third and centre one containing two dining-halls, kitchens and an assembly room, which will be used by those who are convalescent. Altogether there is accommodation for 100 patients in forty-eight single wards, eight double, and twelve for three beds. The total cost of the land and buildings has been £70,000, this being provided out of the invested funds of the Brompton Hospital, and it is expected that at least £10,000 a year will be required for maintenance.

South Western Polytechnic.

THE lectures on architectural history given during the past session by Mr. Banister Fletcher, F.R.I.B.A., and arranged under the auspices of the Board to promote the extension of university teaching of the University of London, have been very success-



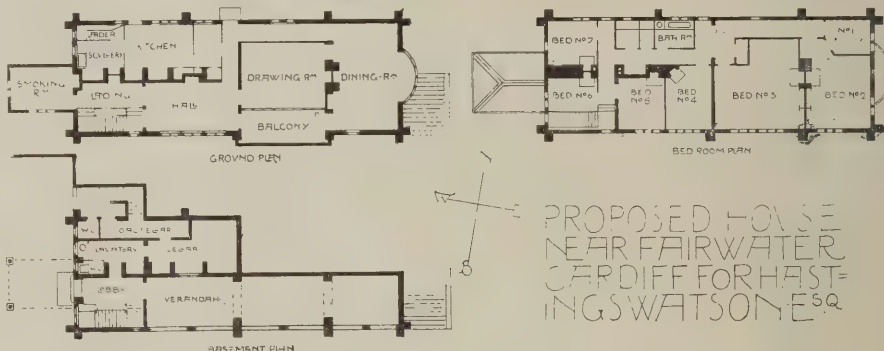
of the type of building erected by road surveyors, &c. It is being built for the North Riding of Yorkshire County Council and is designed on the lines of the simple stone buildings of the neighbourhood, to be executed by local workmen and with local materials. The site slopes away to the town and has influenced the arrangement of the plan. The walls are built of snecked rubble with chiselled quoins, and the roofs are covered with thick grey stone slates in graduating courses. All external woodwork

ful. Fifty-nine students entered for the course and fourteen satisfied the examiner (Prof. W. R. Lethaby, of the Royal College of Art). The names of the successful students are:—*Frank L. Atwell, Major Alford, Herbert E. Bailly, *Kate Coast, Henry A. Buck, Charles Coxall, Sybil R. L. Gould, *Stephen S. Groom, Jessie A. C. Kosrelka, James H. Morton, *Minnie Thatcher, Lucio Velasco, William F. Wallace, Francis C. Welles. (Those with an asterisk against their names received in addition a certificate of merit.) For the coming session, which commences on Monday, October 3rd, at 7 p.m., a series of visits are being arranged to important buildings and museums around London. This is an excellent feature and one we are glad to see is being generally adopted for the instruction of students.

IN PARLIAMENT.

(By our Press Gallery Representative.)

AN interesting report written by Mr. W. Sydney Smith, one of His Majesty's Inspectors of Factories, and issued by the Home Office, on the construction, arrangement and fencing of hoists and teagles has been presented to Parliament. The following is a summary of the recommendations:—With regard to hoists, stops should be provided on all hand ropes, starting ropes, rods or chains, to stop the cage automatically at the highest and lowest points of travel; and all drum hoists should, in addition, be fitted with automatic stop motion to prevent over-winding. The maximum load that may be carried by any hoist should be clearly marked on the cage and on each landing. All hoist cages in which any person travels should be suspended by not less than two independent ropes or chains, except in the case of directly-supported hydraulic ram hoists. All ropes, cables and chains used for the suspension of hoist cages should be periodically examined, and chains and cables should be periodically examined and tested, and also annealed at least once in every twelve months. The safe loads indicated by the test and the times of annealing should be entered in a register. All projections in hoist wells, including door lintels, if the doors are not flush with the side of the hoist well, should be bevelled by sloping boards, and the sides of all hoist wells should be made smooth. All hoist wells and landings should be efficiently lighted. A clearance of at least 3ft. should be left at the top and bottom of the hoist well, between the top and bottom of the cage respectively, when the cage is at the points of its highest and lowest travel. The tops of all hoist cages should be covered with an efficient roof or with stout wire-netting. After several suggestions as to the securing of the hoist openings, Mr. Smith says all hoist cages should be provided with efficient



safety gear, and suitable locking grips should be provided for the hand starting ropes, rods or chains of all hoists where these pass through the cage.

Mr. Bryce asked Lord Balcarras whether the notice of H.M. Government had been called to the proposal to destroy some of the best preserved parts of the ancient walls of Berwick-upon-Tweed, dating from the time of Edward I., and whether steps would be taken to secure their preservation.

Lord Balcarras replied that the First Commissioner had been in communication with the municipal authorities, and hoped to arrive at an arrangement with them for the preservation of the walls.

Replying to Sir Henry Fowler a fortnight ago, Lord Balcarras said that the number of men regularly employed on the building of the Victoria and Albert Museum was 550, of whom 320 were on the building and 230 were preparing the stonework at the masons' yard.

Mr. Whitmore asked Lord Balcarras whether he would consider the desirability of opening to the public the enclosure round Canning's statue in Parliament Square, and of laying it out to correspond with the adjoining plot of garden on the south. Lord Balcarras said the matter would receive consideration.

TWO HOUSES BY MR. VOYSEY.

OF the two houses by Mr. C. F. A. Voysey illustrated on this page "Tilehurst," Bushey, is roofed with tiles. The pots are black, the walls rough-casted and the windows of iron and stone. The house for Mr. H. Watson, near Cardiff, will be roofed with green slates, chimney-pots black, walls rough-cast, green Forest of Dean stone for windows, &c., columns to entrance of black marble unpolished.

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NEW COURT HOUSE
& POLICE STATION at
BEDALE.
For The North Riding
County Council of Yorkshire.
Walker & H. Brerley, County Arch^{ts}.





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Builders' Notes.

The L.B.A. Amendment Bill will be introduced into Parliament again next session.

Change of Title.—The title of the Non-flammable Wood and Fabrics Co., Ltd., of Townmead Road, Fulham, S.W., has been changed to "The Fire-Resisting Corporation, Ltd."

The Fifth Annual Ironmongery, Hardware and Electrical Trades Exhibition and Market will be held from July 12th to 22nd at the Royal Agricultural Hall, Islington. The organizers' offices are at Broad Street House, New Broad Street, E.C.

Sheffield Masons' Strike.—The dispute between the master-builders of Sheffield and the operative masons does not show any signs at present of coming to an end. The employers state that they have not been inconvenienced by the strike, notwithstanding the fact that the weather has been so satisfactory for outside labour. About forty men have been brought into the city from other districts.

Savoy Hotel Extensions.—Mr. A. F. Ammon, of 54, Haworth's Buildings, Cross Street, Manchester, writes to explain that the "Coconco" floors in these extensions were constructed by Messrs. James Stewart & Co., the contracting engineers. Mr. Ammon's part of the work consisted in supplying the specially-designed wire mesh, which was made by Messrs. Richard Johnson, Clapham & Morris, Ltd., of Manchester. This mesh has now been registered under the title of the "Johnson-Ammon Wire Lattice."

The Asbestic Brick and Tile Co., Ltd., held its statutory meeting at the registered offices, 18, Austin Friars, E.C., on Thursday last. This company has been formed to exploit (under the Boas patents) a special form of sand brick known as the "asbestic brick." Tests made at the experimental factory in Paris, and reported upon by Mr. Kirkaldy, have been very favourable. A model factory is now being erected in Regent's Park on up-to-date lines, driven by electrical power and equipped with the most modern machinery. It is anticipated that the brick will be available for use in London towards the beginning of September.

Another Presentation to Mr. Howard Colls.—A deputation from the Society of Architects recently waited upon Mr. Howard Colls and presented him with a resolution of the Council, engrossed on vellum, expressing appreciation of his action with reference to the recent case of *Colls v. The Home and Colonial Stores, Ltd.*, involving an important question in regard to the law as affecting ancient lights. Mr. Colls expressed his pleasure at knowing that his action had been so generally approved and at the way in which it had been expressed by the Council, whose presentation he accepted with thanks as a tangible proof of their appreciation. (It will be remembered that the Institute of Builders presented Mr. Colls with a silver bowl as a mark of their esteem.)

A Central Authority for Roads.—The following resolutions have been unanimously adopted and signed by a committee of civil engineers appointed by the Roads Improvement Association to consider the construction of new and the maintenance of existing trunk roads:—(1) That a central department should be established to determine the direction and control the construction of new trunk roads; (2) that the central authority should exercise control over existing trunk roads with power to determine their width and the frontage lines of buildings on such roads. Provided always that no new building shall be erected within 50ft. of the centre of a trunk road and the local authority shall pay suitable compensation for unoccupied land within the existing fences.

Law Cases.

Road Scarifiers.—In the case of *Morrison v. Asplen*, decided a short time ago in the Chancery Division of the High Court of Justice, the plaintiff sought an injunction and damages for the alleged infringement by the defendant of a patent scarifier attached to a road roller. The essential difference between the two machines was that in the defendant's the frame carrying the tools was not rigid, being capable of rising and falling with a spring action, whereas in the plaintiff's machine the tools were held rigidly against the ground and did not yield automatically. It was contended that the defendant's machine was an infringement of the plaintiff's because it had a frame in which the tool-holder was pivoted and arranged to slide vertically on guides, but the judge held that it did not infringe that claim in the plaintiff's specification—he held, in fact, there was not a pivoted tool-holder in the defendant's machine. Judgment for defendant, with costs. [The Morrison machine is made by Messrs. Aveling & Porter, of Rochester, and the London offices for the Asplen machine are 46 and 47, London Wall.]

Architects' Action against Council.—In the King's Bench Division of the High Court an action was recently brought by Messrs. Coggin & Wallis, architects, of London, against the Aldershot Urban District Council to recover money for work done in connection with the preparation of plans and taking-out of quantities, &c., in respect of the Aldershot Board School in Newport Road. The defendants denied liability; they said the work had to be done to the approval of the Board of Education and that such approval was never given. Counsel for the plaintiffs said the work was done for the Aldershot School Board, but the action was brought against the urban district council, which, under the Education Act, 1902, took over the liabilities of the school board. The last decision in the Court of Appeal seemed to lay down that if plans which were properly necessary were fully prepared the body for whom they were done were not entitled to refuse payment. He could not see for a moment how it could now be said that the Board of Education had not given their sanction to the plans prepared by the plaintiffs, when they had given their sanction to the school board to proceed with the erection of the schools, and had merely raised a question in objection as to the matter of a loan that was needed. When the urban district council came into power on July 1st, 1903, they seemed to think they could get the work done cheaper than the school board, and they sent a deputation to view a number of schools in various parts, and then recommended that plans should be drawn in their own surveyor's offices. The urban district council said there never was any approval of the plaintiffs' plans by the Board of Education, and that though they had the work done there was still no contract because there was no seal. Besides the commission of 2½ per cent. on £14,000 which the plaintiffs now claimed, there were two other items: one of £200 for preparing quantity plans, and £45 for plans for temporary accommodation schools. — Mr. Justice Grantham said that so far as he could see from the letters the defendants were morally bound to pay, the work having been done on the terms proposed by the school board. This was not the first time in which difficulty had arisen from the clashing of two authorities. The school authority was liable up to a certain date, and from that date the new authority became liable. It seemed to him that the architects were clearly entitled to the money if the change of authority had not taken place, and merely

because the urban district council took over the power at a certain date he did not think they had the power to say they would not pay the liabilities of the school board.—An adjournment was made for the purpose of allowing the parties to consult. After a short interval defendants' counsel said his clients had agreed to submit to a verdict for the plaintiffs for £500.—Judgment accordingly for the plaintiffs, with costs.

PLENUM VENTILATION.

Mr. Henman's Reply to His Critics.

IN the current issue of the R.I.B.A. Journal a reply to the discussion on the plenum system of ventilation is given by Messrs. William Henman and Thomas Cooper, and Messrs. Henry Lea & Son, respectively architects and consulting engineers for the Royal Victoria Hospital, Belfast. After dealing with Mr. Perkins Pick's criticisms of some details of the drainage system at the hospital—"all drains are kept well below the floor level of the air ducts, which are by no means the dark, damp places some seem to suppose"—they go on to reply to other criticisms as follows:—

Mr. Saxon Snell's remarks can scarcely be taken seriously, and were evidently justly appraised by subsequent speakers. In contrast therewith we commend the more thoughtful views expressed by Dr. S. Rideal and the Rev. J. B. Lock, because, with greater practical experience, their opinions may become more definite and serviceable.

Mr. Harold Griffiths questioned the employment of fixed screens of cocoa-nut fibre, but the experience of ten years confirms us in their use. If of ample area, periodically cleansed and renewed they are suitable and efficient, and far more simple and serviceable than when made to revolve, because then they either become over-saturated with water or imperfectly cleansed. When made in sections, as at Belfast, cleansing and renewal are easily effected at much less cost than can be done with revolving screens, to say nothing of the additional cost incurred by causing them to continuously revolve. Heating coils should certainly be kept clean; we always arrange so that they can be and are regularly cleansed as well as the air ducts. When open fires are employed chimneys have to be swept, grates cleaned and works of repair and renewal from time to time effected, which probably involve greater labour and expense than is required for cleansing and maintaining suitable appliances for securing plenum ventilation with heating.

Mr. Max Clarke errs in advocating air channels of metal or lined with glass or vitreous enamel; such materials are costly and in many respects unsuitable. Good plain brickwork, in ducts of ample proportion, is economical and thoroughly serviceable.

It is surprising that Mr. A. E. Munby has not come across buildings in which the furnace to the heating apparatus is used for extracting some of the air from the interior of the building. It may be better than trusting altogether to chance; but if he wishes to realize the value of the arrangement we suggest he should calculate the cubical capacity of a building—say a church—and ascertain the volume of air passing through the furnace flue in a given time; he may be surprised to find how long it takes to cause a single change of air in the church. He may also take into consideration the fact that probably for six months in the year there will be no fire in the furnace, just when change of air within the building is most required.

If those who question whether advocates of plenum ventilation pin their faith on the

admission of air to the upper portion of an apartment and its exit near the floor level carefully read Mr. Henman's paper they will scarcely fail to understand why that arrangement accords with Nature's method, and is therefore preferably followed.

It is difficult to understand why the speakers who advocated plenum ventilation for assembly rooms, schools, and even for operating rooms question its utility in hospital wards; because even in hospitals erected on the most approved pavilion plan complaint of defective ventilation are common, particularly at night and in the early morning. Unfortunately, hospitals are rarely visited by architects or the public at such times. But go to the General Hospital, Birmingham, or the Royal Victoria Hospital, Belfast, at any hour of night or day or any day of the year, and it will be found that uniform temperature and freshness are maintained, to say nothing of freedom from draughts and of the noise, dirt, irregular heating and attention required when open fireplaces are employed.

Expense, as the president intimated, is certainly an important item in connection with any system of ventilation and heating. Our endeavour has been so to simplify hospital planning, and adapt appliances for heating and ventilation, that at Belfast the initial outlay and cost for maintenance are very considerably below those of any other similarly complete hospital.

The deductions of Mr. George H. Bibby are so obviously unreliable that it is not necessary to take up time to do more than state that we communicated them to the superintendent of the hospital, and here give his reply:—

"The general health of the hospital establishment is excellent (*twice underlined*). I cannot trace the doctor who is alleged to have said the hospital always gives him headache. I have twelve doctors and medical pupils in residence, and all, except one, are in excellent health, and the hospital had nothing to do with that one man's state of health.

"The nurses, too, are in far better health than they were before we came here. I have that from the doctor who attends them.

"Why don't you propose to the R.I.B.A. to send a small deputation here to enquire into the whole question on the spot? What all should desire to know is the truth—whether plenum ventilation is a success and worthy of adoption or not; and in no other institution can that be better ascertained than here, where a very fair idea can also be obtained of the cost, which is a matter of great importance."

He has also given us full particulars of the amount of coal consumed and the number of residents in the old and new hospitals, which entirely disprove Mr. Bibby's statements. For the year 1902 it was 516 tons for 190 residents in the old building, where the heating and hot-water supply were very inadequate, and only the linen from small fever wards was washed on the premises.

In the new buildings the heating, ventilation and hot-water supply are ample for the full complement of about 400 residents, although at present there are only 300. There is also a complete laundry, in which all the washing is done on the premises; on the basis of eight months' coal consumption it is estimated that it will not exceed 1,800 tons for the year—by no means a proportionately unreasonable amount for the effective work accomplished in an establishment so much larger than the old one.

We hope that Mr. Bibby may be more

accurate in the information he is collecting for publication *re* the heating and ventilation of hospital wards, or it will be of no practical value.

In conclusion, we do not expect our work to be above criticism. Diversity of opinion there is sure to be. Most of us have probably learnt that what we once thought impossible, or at least unlikely, has actually come to pass, and that appliances and processes have become practically useful and a commercial success in consequence of slight improvements in parts. If, therefore, plenum ventilation be accepted in principle its public

who do not discriminate between the various means by which it can be carried out. On what may be termed the "high-pressure method" a temperature of 130 degs. Fahr. as the air enters the apartments is not uncommon; but in Belfast the temperature of the air in no portion of the buildings exceeds 62 degs. or 63 degs. Before designing the machinery for Belfast enquiry was made as to the power which would be required for working on the high pressure method, and it was found that 100-h.p. would be necessary; instead of which it is successfully accomplished with an ascertained expenditure of $5\frac{1}{4}$ -h.p. on what may be termed the "low-pressure method."

CHRIST CHURCH, WESTMINSTER.

THIS church, which is situated in Victoria Street, was built in 1843 by Mr. Ambrose Poynter, architect, father of the P.R.A., but for financial reasons the tower was not erected. Last year the vicar, the Rev. F. Keys Aglionby, decided on its completion, and Mr. George A. Hall, F.R.I.B.A., was commissioned to prepare a new design, this being at once approved and the work put in the hands of Messrs. George Trollope & Sons, contractors. The style is of the latter period of Early English, and where the new tower joins to the old work an arcading of dressed stone surrounds the four sides, while diminishing buttresses with weathered pediments and trefoil sinkings support the corners. The bell-chamber is lighted with four two-light windows having quatrefoil tracery, and externally at the springing of the arch mouldings are portrait heads of the King and Queen, the Hon. J. G. Talbot and Canon Henson, the Bishop of London and the Rev. F. K. Aglionby, the Rev. P. Waddington and the architect: all by Mr. Rudge, sculptor. Under the main cornice grotesque corbels support the piers of the embattlemented parapet, which ends in four sculptured pinnacles with heads of Christ to the pediments, and thorn-leaved finials. The material used is the same as in the old work—Kentish rag undressed and Bath stone for dressed work. Two extra floors are provided, being reached by a spiral staircase which is continued to the roof. The total height of the tower is 130ft. to the top of the pinnacles, and a flagstaff carries it another 40ft. high. The cost has been about £2,400. Prior to the existing church, Westminster Chapel stood on the site for 200 years. This is said to have been built by Sir Christopher Wren, and the bell now in use bears the inscription, "John Cifton made mee 1639."



NEW TOWER TO CHRIST CHURCH, WESTMINSTER.
GEORGE A. HALL, F.R.I.B.A., ARCHITECT.

utility really depends on the careful adjustment of details and of full knowledge of the best methods for securing desired results.

Every installation, no matter how badly proportioned, in which air is forced through a building is called "plenum ventilation," but air at a high temperature forced along small ducts and through buildings by high-speed fans, cannot as regards efficiency be compared with the low temperature, spacious ducts and slow-speed fans adopted at Belfast. Bad examples have brought condemnation upon the plenum system, generally by those

A new Ambulance Drill Hall at Accrington has been erected in King Street at a cost of £2,500. The premises are of one storey only, and comprise the hall, 69ft. long by 56ft.

wide, with rooms at one end for officers, men and storekeeper, and a lecture room; and the ambulance van-house, arranged so that the van can be run into the drill-hall for practice in loading and unloading. Lavatories for both sexes are provided, and the whole of the premises are heated by hot water and lighted by electricity and gas. The buildings are of brick and terra-cotta and the floors of maple blocking and tiles. The architects were Messrs. Haywood & Harrison, whose offices are at Accrington and Lytham.

Enquiries Answered.

The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Sketching between York and Durham.

HALIFAX. — UBIQUE writes: "I propose taking a fortnight's holiday in order to sketch and do some measuring for the R.I.B.A. testimonies of study. I was thinking of dividing my time between York and Durham. What should I measure in these places, and from whom can I get permission?"

I would suggest that York be first visited, when probably so much would be found to do that there would be no need to go further. The principal difficulty, where there is so much, is to select the subjects which are most suitable for the immediate purpose. Too much should not be attempted, and so far as possible the work should be plotted out to scale on the spot. Two or three bays of the wall arcading, for instance, taken from the interior of one of the transepts, should suffice for one of the sheets (Early English), while one of the Decorated windows in the passage leading to the Chapter House might serve for another, and a piece of foliage enrichment should not be difficult to pick out for the freehand drawing. The Dean should be written to in advance for permission, a stamped and addressed envelope being enclosed for reply, and the secretary of the York Architectural Society might also be communicated with. G. A. T. M.

Architects' Fees.

E. H. writes: "Can you give me the names of any legal cases which have been decided where architects sued for fees, and when the R.I.B.A. scale of professional fees was accepted as reasonable and fair?"

With regard to this query, the scale of charges fixed by the R.I.B.A. does not appear to have been recognized by the courts as binding on the employer in the absence of a special agreement to that effect. See *Gwyther v. Gaze* ("Times," February 8th, 1875); *Farrington v. Tomkins* (9 Times L.R., 566); *Burr v. Ridout* ("Times," February 22nd, 1893). The result of all the cases relating to such a question is that architects are only entitled to recover reasonable charges. This is a question of fact for the jury. Speaking generally, 5 per cent. on the cost of the works is the usual rate. But this fee is too large where the work consists of a block of several buildings all alike, and too small where the cost of the work is small or where a great amount of designing or superintendence is required. S. P. J. MERLIN.

Architect's Position under Executors.

P. & B. write: "We have been employed by a client to do certain architectural work for a large building. We have prepared the plans, &c., and the work was being well proceeded with until about three weeks ago, when the client died. He was a very wealthy man and preferred to pay everyone at the end of each month. We were paid a certain sum for our plans and were also paid every month for professional services. What we wish to know is, have we any claim upon our drawings if they are worked to by another architect who has been engaged by the executors to finish the building? We carried out the work to the satisfaction of our late client, and would have been employed by him until the end. Are we entitled to any compensation? If we were to copyright our plans, would this prevent the engaged architect working from them?"

In the present state of the law on the subject it is doubtful whether you can obtain

any redress, though in equity you are entitled to compensation. Of course you must be paid in full for the plans, according to the Royal Institute schedule, and if there is any money due the executors can be made to settle. In the case of *Ebdy v. McGowan* (1870) it was decided that where the work was not proceeded with the employer could claim the plans upon payment of the architect's fees. This was never appealed against, but it seems unfair, for reasons which we have stated before and cannot repeat now. It appears as though you cannot prevent another architect carrying out the work, but as the employer made a contract with you you ought to be entitled to compensation for the breach of it, and the executors are not altogether free of liability, for you hold the position of arbitrator between them and the builder in respect of the work executed under you. The law, however, is not definite upon the subject, and you should take counsel's opinion. As a safeguard, a clause ought always to be inserted in the contract stating that the drawings and specifications are the property of the architect. You will find particulars about copyrighting plans in "Specification No. 7" (price 3s. 3d. post free from our offices), but we do not think mere copyrighting could prevent them being worked from by another architect. In the circumstances we consider it unprofessional conduct on the part of another architect to undertake the work.

Ferro-Prussiate Prints.

SHREWSBURY. — APPRENTICE writes: "I shall be glad if you will kindly describe the process of photo-copying plans so as to get a white line on a blue ground."

The process you refer to is the ordinary ferro-prussiate. Prepared paper can be bought at a photographic dealer's, and it is only necessary to place it in contact with the tracing (in a printing frame having a sheet of glass) and expose till the image has a metallic sheen; then wash thoroughly in water, and the print is finished. There are several other processes, giving blue, brown or black lines on a white ground. We shall publish an article shortly describing all of them.

Window Board for Shop.

LONGTON. — INVICTA writes: "The accompanying sketch (not reproduced) shows window board to butcher's shop, to be wood-framed and tiled with 6in. tiles. The shop floor is supported by semicircular arching from cellar walls. Kindly explain how to construct the window board and describe how the tiles are to be laid. They will require to be frequently washed down."

The easiest way to support the front of the window board in question is to lay a small iron girder at the correct height, in the same way as apparently has been done in the case of the inner edge of the pavement light below. In such circumstances I should prefer that the tiled slab should be inside the window frame, but if the projecting ledge is required I should suggest that the whole window board be made to slide forward when the window is open and to draw inside when the window is shut down. In making it to hinge I think the joint in the tiles will appear unsightly. I know of no better way of fixing the tiles than to do so in cement, with very fine joints, on a wood backing and in a wooden or iron frame.

F. S. I.

Distemper; Fanlight Openers.

LONDON. — E. G. W. writes: "(1) Do you know of a distemper suitable for outside work in a tropical climate such as that of Ceylon? It would have to stand an extremely moist heat and very heavy rains during the monsoon. The price must be moderate. (2) Can you recommend any particular make of

opening gear for the top-lights of a window hinged at the side and opening into the room?"

(1) Carson's "Muraline" (supplied by Messrs. Walter Carson & Sons, Grove Works, Battersea, London); Hall's washable distemper (supplied by Messrs. Sissons Brothers & Co., Ltd., of Hull, and 1998, Borough High Street, S.E.); "Calcitine," made by Messrs. Duggan, Neel & McCole, Ltd., Langbourne Wharf, Millwall, E.; and "Olsina," made by Messrs. Mander Brothers, Wolverhampton. (2) Several excellent arrangements of this kind are supplied by Mr. Robert Adams, of 65 and 67, Newington Causeway, London, S.E.

Tenders for Cottages.

DELA writes: "A company recently submitted plans and specifications (no quantities) to several builders for the erection of a pair of cottages near Ashby. At a meeting of the directors the lowest tender was accepted, but afterwards the builder (A.) whose estimate was thus accepted had several other estimates accepted, and found therefore that he could not carry out the erection of the two cottages referred to. At a subsequent committee meeting it was decided, after receiving the builder's letter declining to go on with the work, to accept the next lowest tender, which I think was £50 above the lowest, and to compel A. to pay the difference. Can the directors legally claim this amount?"

Yes; the builder is liable for the £50, as the acceptance of the tender constituted a promise and an agreement.

Perspectives.

DEWSBURY. — PERSPECTIVE writes: "Which is the best way to make a perspective drawing of a villa residence? Should the plans be placed upon the board, and lines drawn from the numerous points towards the position of spectator and cutting the picture plane, or should the measuring points and distance points be used?"

We cannot spare space here to explain the setting-up of perspectives. You should consult one of the well-known text-books on the subject, such as Middleton's "Principles of Architectural Perspective," price 2s. 6d. post free from our offices.

Palladio.

CARDIFF. — H. W. H. writes: "I have just obtained 'The First Book of Architecture, by Andrea Palladio, translated out of Italian, with appendix touching doors and windows, by Prof. Le Muet, architect to the French King. Translated out of French by G. R.' The book was printed in 1693, and is dedicated to Daniel Colwall, Esq., by the translator, Godfrey Richards. Can you inform me what is its value?"

The edition of Palladio you have is by no means scarce. It is worth a few shillings only.

Buildings to Measure around Southport.

SOUTHPORT. — PENNA writes: "Please name some building near Southport containing Early English or Perpendicular detail which would be suitable to measure for the R.I.B.A. intermediate examination."

I know of no building near Southport containing Early English detail. You will have to go further afield. Why not take a day trip to Cartmel (Cark-in-Cartmel, Monday, Wednesday and Saturday, 3s. 9d.) and visit the priory church? The north doorway is Early English, with good arch mouldings, dog-tooth ornament and shafts with foliated caps. See article on "A Lancashire Priory Church" in THE ARCHITECTURAL REVIEW for September, 1897. Or you might go to Bolton Abbey, Yorkshire, where there is good Early English work (Saturday excursions, 3s. 3d.). Most Lancashire churches are of Perpendicular date. Near to Southport

is Sefton, the main body of the church of which is early sixteenth century, but there is some late fifteenth-century work in the north aisle. The porch is worth measuring. The doorway has a square label and spandrels, and there is a parvise chamber over, with window and niche above. There is a good oak ceiling to the porch, and angle buttresses. You might also go to Manchester Cathedral and measure the screen to the Derby Chapel, or other work there. See Glynn's "Churches of Lancashire" (vol. 27, new series, Chesham Society), and Carøe's "Sefton"; both in the Southport Reference Library. F. H. C.

Strength of Steel Stanchion.

PUTNEY.—PAX writes: "Kindly explain why the following formula for steel struts, when worked out, gives results much in excess of makers' published lists. The formula set forth below was given in the course of tuition to a student:— w = safe load in tons; c = a coefficient; l = length of column or strut in inches; d = least diameter in inches; a = sectional area in inches; r = safe resistance to compression in tons per square inch. Value of c for steel is given as 1,000. Value of r for steel is given as 10 tons.

$$w = \frac{ar}{1 + \frac{l^2}{cd^2}}$$

Assuming a stanchion of I section (stock) 12 x 6 by 20ft. long, both ends fixed, area of section 15.9 sq. in. by the formula gives the following result:—

$$w = \frac{ar}{1 + \frac{l^2}{cd^2}} = \frac{15.9 \times 10}{1 + \frac{240 \times 240}{1000 \times 6 \times 6}} = \frac{15.9 \times 10}{1 + \frac{8}{5}} = \frac{159}{13} = 12.23 \text{ tons safe load.}$$

The manufacturers' tables for same section strut gives the safe load as 38.25 tons, being one-quarter the breaking weight. You will see there is a great difference in the actual test and the result of formula, and it appears to me that the error is in the constants c and r ."

The coefficient r for greatest intensity of stress in tons per square inch due to thrust and flexure of a mild steel stanchion with a factor of safety of 4 should be 6.5; the coefficient c for rolled steel joist should be 900. Then for the example given

$$w = \frac{ar}{1 + \frac{l^2}{cd^2}} = \frac{15.9 \times 6.5}{1 + \frac{240 \times 240}{900 \times 6 \times 6}} = \frac{103.35}{1 + 1.77} = 37.2, \text{ say 37 tons safe load.}$$

For a full discussion of the whole subject, see "Designing Ironwork," second series, part ii. (Spon, 2s. 6d.). HENRY ADAMS.

Main Drains.

BIRMINGHAM.—ARCHITECT writes: "A local by-law is as follows: 'Every person who shall erect a new building shall provide, in every main drain or other drain of such building which may directly communicate with any sewer or other means of drainage into which such drain may lawfully empty, a suitable trap at a point as distant as may be practicable from such building and as near as may be practicable to the point at which such drain may be connected with such sewer or other means of drainage.' For about twelve years after the by-laws were passed and published the interpretation put upon this one was that where, for instance, several houses were being built the drains of which were severally carried into a main drain at the rear communicating directly with the public sewer, such drain was the 'main drain' referred to in the by-law, and therefore required to be trapped; but the drain to each house

was not considered a 'main drain' and did not require trapping from the main drain. On the appointment of a new surveyor a few years ago the interpretation of this particular by-law was altered and each tributary drain was held to require trapping from the main drain. Plans were passed some time ago for certain houses, and traps were not shown on the branch or tributary drains, but one was shown on the main drain (which, by the way, is a 'combined drain' whose maintenance is thrown upon the owner by virtue of a local Act). The plans were approved in this form, but the local authority say that this was due to an oversight. It is contended that, irrespective of the question as to whether the plans comply with the by-laws (it is contended they do), the local authority is bound by its approval. Is this so?"

The legal interpretation of the by-law is doubtful, but we think there can be no doubt that to be sanitary each tributary drain ought to be disconnected from the "combined drain" by a trap. As regards the oversight in the approval of the plans, this does not prevent the local authority correcting the mistake and insisting upon the by-laws being obeyed. The surveyor's error does not exonerate you from disobeying the law.

Keystones.

St. Bartholomew's Hospital.—The foundation-stone of the new buildings will be laid by the King and Queen on July 6th.

A new Chancel to St. Swithun's Church Lewisham, is being erected from the design of Mr. Ernest Newton.

Cardinham Parish Church, Bodmin, has fallen into a bad state of repair, and Mr. G. Fellowes-Prynn has reported to the rector and churchwardens as to the restoration of various portions of the building.

New Municipal Buildings at Jarrow have been erected. Mr. F. Rennoldson, of South Shields, was the architect, and Mr. J. C. Nichol the contractor.

At St. Albans Cathedral new episcopal throne and stalls have been erected from designs by Mr. J. Oldrid Scott, the work having been carried out by Mr. Robert Bridgeman, of Lichfield.

A new Tower to Llanegwad Church, Carmarthen, has been erected from the design of Mr. David Jenkins, F.R.I.B.A., of Llandilo, at a cost of £700. Mr. W. D. Morgan, of Gwynfe, Llangadock, was the contractor. It is planned for a peal of bells to be added later.

Restoration at Karnak.—The work of restoring the fallen columns of the hypostyle hall at Karnak will shortly be completed. Mr. Legrain, who is in charge, employs hundreds of trained fellaheen and rebuilds as the ancients did, lifting the enormous blocks on inclined planes of sand.

A Memorial to Robert Louis Stevenson has been placed in St. Giles's High Kirk, Edinburgh. It takes the form of a life-size bas-relief portrait executed in bronze by Mr. Augustus Saint Gaudens, the well-known American sculptor, who had the unique advantage of studying Stevenson from the life.

Devon and Exeter Architectural Society.—The "Proceedings" for 1903-04 have just been issued. The book is illustrated by photographic reproductions of Broad Street, Bath, the garden house at Widcombe and the staircase of Nassau House (these in connection with Mr. Mowbray A. Green's lecture on the eighteenth-century architecture of Bath) and one or two scratchy line drawings. A report of the past year's work was given on p. 251 of our issue for May 25th.

The Tennyson Memorial Statue at Lincoln is to be executed by Mr. Christopher Turnor and will be erected on the Minster Green, at the extreme south-east corner, opposite the Chancery.

The new Baths and Washhouses at Haggerston, recently illustrated in our pages, were opened on Saturday by the Mayor of Shoreditch. Mr. A. W. S. Cross, M.A., F.R.I.B.A., is the architect, and Messrs. Kilby & Gayford are the builders.

A Village Church at Southwick, which is situated a couple of miles from Trowbridge, has been erected from designs by Mr. C. Ponting, Marlborough, the diocesan surveyor. Messrs. Long & Sons, of Bath, were the builders.

Royal Exchange Frescoes.—Mr. George Harcourt, of Arbroath, is engaged on a fresco 17ft. by 12ft. representing "The Presentation of the Charter to the Bank of England," which is to occupy one of the twenty-four panels in the Royal Exchange.

The new County Quarter Sessions House at Preston has been erected at a cost of £65,000. It has a massive octagonal tower, rising in diminishing tiers of columns to a height of 175ft., visible for miles around. Mr. Littler was the architect.

The Additions to the Isolation Hospital, Watford, are being warmed and ventilated by means of Shorland's patent Manchester stoves with descending smoke flues, Manchester grates and exhaust roof ventilators, supplied by Messrs. E. H. Shorland & Brother, of Manchester. Similar stoves are also being supplied to the new workhouse infirmary at Whitehaven.

The new Hospital in Vienna, of which the foundation-stone was laid by the Emperor of Austria last week, will form quite a town in itself. There will be forty separate buildings, of which thirty-two will be clinics or hospitals and the remaining eight devoted to offices and residences for the staff. All the clinics will have flat roofs with gardens, so that patients, particularly the consumptives, can lie in the open air as much as possible.

Glasgow Royal Infirmary.—The managers have remitted the plans for the reconstruction of this hospital to Sir Henry Burdett, and have associated with him Dr. Mackintosh, of the Western Infirmary, Glasgow, "to examine and make suggestions as they may think advisable for their improvement in detail or as a working whole, having in mind that the general ground plan of the main ward blocks must not be departed from and that the number of beds provided (700) must not be diminished."

The Lamp Standards on Waterloo Bridge.—The reply of the London County Council to the letter addressed to them by the Architectural Vigilance Committee about the removal of the fine old lamp standards on Waterloo Bridge is miserably feeble. These fine standards were designed by Professor Cockerell, R.A., and not only have they been replaced by plain lanky posts but "in the course of removal the old standards were unfortunately much broken, and the Council has to state its regret that the old standards have not been preserved."

Bradford Workhouse Extension.—A new hospital pavilion in connection with the Bradford workhouse at Horton is being erected to accommodate about 148 patients. It is expected that the cost will be £16,000. It is the intention of the Board to convert the present workhouse building into a large hospital, and to erect children's wards and a maternity ward, &c. at the opposite end of the building, fronting Horton Lane. The new cottages at Daisy Hill for respectable old people are in course of erection; it is intended to spend about £50,000 in workhouse accommodation there.

THE PENALTY CLAUSE.

IN view of the serious liabilities to which the contractor who fails to complete his work within the given time is sometimes exposed, it may be of interest, says "Engineering," to glance for a moment at the legal aspects of the penalty clause. In the first place, it should be remembered that the parties to a contract deliberately prevent themselves from seeking the assistance of ordinary tribunals, as they substitute ascertained or liquidated damages for the sum which might be awarded in an action at law; although such a covenant might have been enforced in former days by the courts of common law, courts of equity were not slow to establish a rule that where it was shown that the exact damage sustained by the injured party was capable of easy estimation it was the duty of the judge to disregard the penalty clause and award a sum of money commensurate to the actual injuries sustained. This principle applies to the majority of building contracts, where it is beyond the power of any man, much less a court of justice, to ascertain the monetary value of, say, three weeks' delay in the completion of a house. Hence, the penalty clause is nearly always capable of enforcement.

Thanks to combined action on the part of builders, a strike clause usually prevents the time occupied by trade disputes from bringing the penalty about their ears. As to what constitutes a strike, it has been decided that in addition to a cessation of work caused by the demand for higher wages, the period of a "lock-out" is to be excluded from the calculation. To put the matter shortly, a builder would be excused from payment of penalties in the following cases:—(1) If the work in hand is totally destroyed, *e.g.*, by fire. Both parties are thus released. (2) If the employer (or contractor) causes a delay by interference. (3) If additional works are altered. When a daily penalty is imposed, and the builder sees no prospect of being able to complete within such a time as, having regard to the payment of penalties, would admit of his making some profit, he is wise to abandon his undertaking. In that case the ordinary penalty clause does not apply, for it would then be impossible to fix the date of completion. In such a case the employer would have his remedy in an action for damages, the result of which might be far more favourable to the builder than the payment of an enormous sum in accordance with the penalty clause. It is also important to observe that acceptance of the complete work after a specified time sometimes operates as a waiver of penalties; while if it can be shown that the delay was caused by additional works it is clear that there can be no set-off of the amount claimed for penalties against the contract price.

New Church of St. George, Badshot Lea.—This church was designed by Mr. Charles H. M. Mileham, of 1, Lincoln's Inn Fields, London, and carried out under his direction by Mr. G. Kemp, builder, of Aldershot. The foundation-stone was laid in August, 1902, by the Lord-Lieutenant of the county, and the church was consecrated in October last by the Lord Bishop of the diocese. The walls are built of concrete, faced outside with local flints and inside with brick, and stuccoed. The roofs are of fir timber covered with plain tiling, the ceilings being of "waggonhead" form, boarded. When complete the church will consist of a continuous nave and chancel of four bays, with two aisles also of four bays, tower, porches and vestry. The parts already built are the nave, chancel, north aisle and vestry, as shown in the illustration. The cost has been about £2,500 and the accommodation provided at present is for 250 worshippers.



ST. GEORGE'S CHURCH, BADSHOT LEA, NEAR ALDERSHOT.
CHARLES H. M. MILEHAM, ARCHITECT.

Views and Reviews.

A New Technical Dictionary.

So far as may be judged from the first two parts which have reached us, this publication is quite unworthy of Messrs. Newnes. It is very wide in its scope, embracing every science, art, trade and profession, but ends in dealing incompetently with each. The list of experts responsible for the various branches does not inspire confidence, and the book from a literary point of view is badly edited, there being a multitude of errors in grammar and classification; in fact, the system of classification breaks down in almost every item of any length, while passages are often repeated directly under each other in slightly different words. As regards the branches with which we are specially concerned, the facts are very often wrong and the information given is generally beside the mark, ambiguous, scanty or of only passing moment. It would not be fair, however, to blame the specialists for all the errors, for it seems doubtful whether they have been allowed to alter and correct paragraphs containing references to other subjects: thus in the article on brick-earths the compositions of various clays are given in a way which no chemist would adopt, and a comparison is made which is anything but "instructive," as stated. It is probable that this was written by the architectural contributor, and that the chemical contributor never saw the statements. It is regrettable that all dictionaries and receipt books should borrow so unintelligently from one another. Statements run through book after book without any attempt having been made to test them. Absurd receipts impossible of application, and often erroneous in every particular, are repeated indiscriminately. A technical and scientific dictionary is doubtless needed, but we do not think this one meets the want.

"A Technological and Scientific Dictionary" Edited by G. F. Goodchild, B.A., and C. F. Tweney. London: George Newnes, Ltd., Southampton Street, W.C. To be completed in 15 parts, price 1s. nett each.

American Sculpture.

There are half a dozen men among American sculptors whose work is really fine, but for the rank and file one can only say that they are followers rather than artists of original power. The sculpture of any account belongs to the last two or three decades. "Until the third decade of the nineteenth century there was no native sculpture other than the wax-reliefs of

Patience Wright, the woodcarvings of William Rush and the unrelated efforts of Hezekiah Augur Almost without exception these sculptors of the first half of the century were animated by a single desire—to get to Italy as soon as possible. The reasons for this are not far to seek. Their own country afforded neither sculptural instruction nor examples. Those who went abroad remained there; hence no returning currents of helpful knowledge and counsel came to aid those left behind. . . . With the Centennial Exposition of 1876 came an artistic quickening such as our country never had known before France in particular made strong appeal to our newly awakened tastes, and the work of one or two Americans who had studied in Paris had great influence With the advent of Saint Gaudens there came a notable change in the spirit of American sculpture, while the rapid transformation of its technique was no less marked and significant. Though we owe this change largely to Paris, the result has not been French sculpture. Paris has vitalized the dormant tastes and energies of America—that is all." These few extracts serve to give a brief sketch of the main development of American sculpture. Of the individual achievements we are fully informed by the author of this volume, which is most admirably illustrated with twelve photographs and 104 illustrations in the text.

The work is divided into three sections, the first dealing with the beginnings of American sculpture, 1750–1850; the second with the middle period, 1850–1876; and the third with contemporary sculpture, 1876–1903. Passing through these sections we come at the beginning upon Greenough, the first American who deliberately chose sculpture as a profession and went abroad to study it seriously. His works are academic, severe, and not infrequently harsh and stiff; his seated figure of Washington, however, deserves consideration, though we may not approve of the conception of an American president posed on an archaic seat like a Grecian philosopher. Many remarks have been made about this statue, but not one is so persisting as that of the newspaper paragrapher who interpreted Washington as saying, "My body is at Mount Vernon, my clothes are in the Patent Office."

After Greenough we come to Hiram Powers, chiefly known for his "Greek Slave," a piece of sculpture more meritorious as a life study than a work of art, though in the 'forties it was fondly believed to be the

greatest work of sculpture known to history. It made a sensation wherever it went, and despite the fact that some people had misgivings about its nudity, a committee of clergymen unanimously joined in giving it a "character."

Following Powers came Crawford, whose figures on the Capitol at Washington are numerous, but not great examples of sculpture. Then, after many minor sculptures of the early days, we come to Brown, chiefly remembered for his fine equestrian figure of Washington. Then to the middle period, which produced a quantity of work of very little merit. And so to Ward, with whom began the change that arose after the Civil War. "Dying centaurs and brooding Medeas gave way to Defenders of the Flag and personifications of the Republic. The tendency was everywhere toward the monumental and the significant, and away from the graceful but somewhat meaningless products of the Roman studios." Then followed Meade, Bissell, Hartley and Warner, the last bringing us to contemporary men. Greatest of these is Saint Gaudens, an Irishman by birth, though his father was a French shoemaker. His work is eminently sculptural and strong in composition. Like him too is French. Barnard is another artist of distinction, and Bartlett also, while several more men make up a notable group to whom one may look for great work in the future.

This book is the first of a series that is to give a complete history of the graphic, plastic, illustrative, architectural, musical and dramatic art of America, which series, if we may judge by the first volume, should prove of surpassing interest and value.

"The History of American Sculpture," by Lorado Taft. New York and London: Macmillan & Co., price 25s. nett.

Round about Oxford.

This is a handy little book dealing with all the villages near Oxford, and it will doubtless be welcomed by the many visitors who roam about the district. The author is a clergyman and an antiquarian, and he furnishes particulars and views of the scores of churches that go to make up the bulk of the little volume: we rather feel, however, that more space might have been found for some of the numerous other old buildings to be seen in the villages: many of them are not mentioned, while the few that are referred to scarcely more than in name, as, for example, the market hall of Watlington, of which we are only told it is "dilapidated Renaissance," and the Tolsey at Burford, for which the author can only find room to say that it is the house where the Manor tolls were paid and is of the fifteenth century. The book is illustrated by a number of photographs and drawings, and at the end a new map of the district is given, comprising every town and village described.

"Near Oxford," a popular historical and architectural handbook to over a hundred places of interest within a radius of about fifteen miles, by the Rev. H. T. Inman, M.A. Oxford: Alden & Co., Ltd. London: Simpkin, Marshall. Price 1s. nett, library edition 2s. 6d. nett.

The Compleat Carpenter and Joiner.

In reviewing the last two parts of this work and summing up our views we can only reiterate our opinion as to the other parts—that the work is disappointing. Some of the divisions are very able and worthy of what purports to be the standard book on the subject, but most of them, and especially those by the editor, are unsatisfactory, being generally small in grasp, unoriginal in treatment and not thoroughly practical. Volume VII. contains the concluding portion of a good section contributed by Mr. George Miller on stairs and handrailing, small and inadequate sections on air-tight case-making by Mr. Edward P. Baker and on woodturning by Mr. R. W. Cole, B.A., and a section on cabinet-making, also by Mr. Cole, which, though not all it might be, is fairly

good. The chapter on shop-fitting is inadequate, while the evolution of design in furniture is not properly dealt with. In Volume VIII. there is a well illustrated but not specially illuminating section on joinery by the editor; a short but good chapter on estimating by Mr. W. E. Davis, the author of an excellent little book on quantity surveying; and chapters on shop management by Mr. A. C. Remnant and building law by Mr. E. S. Roscoe, with a glossary of terms.

"The Modern Carpenter, Joiner and Cabinet-maker," edited by G. Lister Sutcliffe, A.R.I.B.A. London: The Gresham Publishing Co., 34, Southampton Street, Strand, W.C. In eight volumes, price 7s. 6d. nett each.

CABINET-MAKING.

AN interesting exhibition of work done by students of the London County Council Shoreditch Technical Institute was held last week at the premises in Pitfield Street, N. The instruction given at the Institute is chiefly in cabinet-making, the district being notably devoted to this trade. There is a technical day school for boys which is performing excellent work in widening the knowledge of craftsmen and giving them a grasp of each branch of the cabinet trade. In the evening classes a number of building trade subjects are taken in addition to the cabinet-making trade, such as plumbing, carpentry and joinery, electrical wiring and fitting, plastering, &c., and, judging by the examples of work produced by the students, is thoroughly efficient. The headmaster and instructor in general subjects is Mr. S. Hicks, while Mr. Percy A. Wells is the chief woodwork instructor in the day school, with Mr. Alfred Carr as his assistant, Mr. George Gummer being the art master. The instruction is practical, which is more than can be said for much of the teaching at polytechnics. The workshops are well fitted up, and the examples of work prove that students become excellent craftsmen, while the training in design on somewhat unpromising material cannot but be of great service in going even a little way to improve the awful stuff at present so much in vogue. The school, however, does not offer the facilities which it should in the higher branches of furniture designing, for the instruction given at art schools, such as the chief department in Regent Street, to students generally divorced from practical work is wrong and can only foster such illogical forms of design as "L'Art Nouveau." By a system of scholarships craftsmen are encouraged to continue their studies after they have left the day school and gone into the trade. The fee for the day school is a very low one: £1 10s. a year.

Obituary.

Mr. A. Hughes, retired builder and contractor, of Llanelly, died recently at the age of seventy-eight.

Mr. Edmund Law, F.R.I.B.A., F.S.I., late county surveyor for Northamptonshire, died recently at the age of sixty-four. In October, 1895, he took into partnership Mr. S. F. Harris, his chief assistant. Afterwards his son, Mr. H. H. Law, became a member of the firm, under whom many buildings in the county were erected.

Mr. R. K. Freeman, F.R.I.B.A., of Manchester and Bolton, and diocesan architect for the diocese of Manchester, died on Thursday last. He was one of the best-known architects in Lancashire, churches in many parts of the county having been erected from his designs. Amongst his local undertakings were the Bolton Infirmary and the Central Higher Grade School.

Francis Harwood, an architectural draughtsman, was found dead at his lodgings in Bloomsbury last week, sitting at a table on which lay a painting brush and other material of his work. The inquest held on Friday showed that he had succumbed to poverty, and that at one time he was in a good financial position.

Mr. J. G. Meiggs, the well-known railway contractor, died recently in London at the age of seventy-seven. About forty years ago he left the United States for Peru and joined his brother, Mr. Henry Meiggs, in building the famous Oroya Railroad, which is still regarded as the greatest feat of railroad engineering in the world. About 8,000 workmen were engaged at one time on this undertaking and more than 6,000 persons died or were killed during its construction. The original contract was taken by Mr. Meiggs at £5,500,000.

Current Market Prices

		£	s.	d.	£	s.	d.
OILS AND PAINTS.							
Castor Oil, French	per cwt.	1	0	5	—	—	—
Colza Oil, English	do.	1	2	0	—	—	—
Copperas	per ton	2	0	0	—	—	—
Lard Oil	per cwt.	2	15	0	2	17	0
Lead, white, ground, car-	do.	1	4	10	—	—	—
bonate	do.	1	0	4½	—	—	—
Do. red	do.	0	17	0	—	—	—
Linseed Oil, barrels	do.	0	17	0	—	—	—
Petroleum, American	per gal.	0	0	5½	0	0	6
Do. Russian	do.	0	0	4½	0	0	5
Pitch	per barrel	0	8	0	—	—	—
Shellac, orange	per cwt.	10	2	0	—	—	—
Soda, crystals	per ton	3	2	6	3	5	0
Tallow, Town	per cwt.	1	3	0	—	—	—
Tar, Stockholm	per barrel	1	1	0	—	—	—
Turpentine	per cwt.	2	1	3	—	—	—
METALS.							
Copper, sheet, strong	per ton	69	0	0	—	—	—
Iron, Staffs, bar	do.	5	17	6	8	0	0
Do. Galvanized Corru-	do.	10	2	6	10	7	6
gated sheet	do.	11	11	3	—	—	—
Lead, pig, Soft Foreign	do.	11	17	6	12	0	0
Do. do. English common	do.	11	17	6	12	0	0
brands	do.	11	17	6	12	0	0
Do. sheet English 3lb. per	do.	14	0	0	—	—	—
sq. ft. and upwards	do.	15	0	0	—	—	—
Do. pipe	do.	9	5	0	—	—	—
Nails, cut clasp, 3in. to 6in.	do.	9	0	0	—	—	—
Do. floor brads	do.	9	0	0	—	—	—
Steel, Staffs, Girders and	do.	5	15	0	6	5	0
Angles	do.	6	0	0	6	5	0
Do. do. Mild bars	do.	119	0	0	119	10	0
Tin, Foreign	do.	120	10	0	122	0	0
Do. English ingots	do.	24	10	0	—	—	—
Zinc, sheets, Silesian	do.	24	10	0	—	—	—
Do. do. Vienne Montaigne	do.	24	15	0	—	—	—
Do. Spelter	do.	22	2	6	22	7	6
TIMBER.							
SOFT WOODS.							
Fir, Dantzic and Memel	per load	1	13	0	3	0	0
Pine, Quebec, Yellow	do.	5	5	0	6	5	0
Do. Pitch	do.	2	5	0	3	0	0
Laths, log, Dantzic	per fath.	4	10	0	5	10	0
Do. Norkoping	per bundle	0	0	7½	—	—	—
Deals, Ljusne, Yellow, 3rd,	3x9 per std	15	0	0	15	5	0
Do. Mesane White, 1st,	3x11 do.	13	0	0	—	—	—
Do. do. do. 3x9 do.	do.	12	10	0	—	—	—
Do. Archangel, Yellow,	2nd, 3x8 do.	12	15	0	—	—	—
Do. Sandarne, Yellow,	3rd, 3x8 do.	11	5	0	—	—	—
Do. St. Petersburg, White,	Unsorted, 3x11 do.	7	10	0	—	—	—
Do. do. do. 3x9 do.	do.	7	5	0	—	—	—
Do. do. do. Yellow, 1st,	3x9 do.	12	15	0	—	—	—
Do. Rigo, White, 2nd,	3x10 do.	8	15	0	—	—	—
Do. do. do. Unsorted,	3x10½ do.	6	17	6	—	—	—
Do. Harnaas, Yellow, 4th,	4th, 4x11 do.	10	5	0	—	—	—
Do. do. do. 5th, 4x11 do.	do.	8	15	0	—	—	—
Do. Räfsö, Yellow, 4th,	3x9 do.	8	15	0	9	0	0
Do. Quebec, Spruce, 5th,	3x9x14ft. do.	7	0	0	—	—	—
Do. English Bay (Quebec),	Spruce, Unsorted,	7	15	0	—	—	—
Do. Point Leamington,	Yellow Pine, 3rd,	8	5	0	—	—	—
Do. do. do. 3x9x11ft. do.	do.	7	15	0	—	—	—
Do. do. do. 3x8x12ft. do.	do.	7	10	0	—	—	—
Do. do. do. 3x7x12ft. do.	do.	6	5	0	12	5	0
Battens, all kinds	do.	6	10	0	9	15	0
Scantlings	do.	0	10	6	0	10	9
Flooring Boards in pre-	pared, 1st .. per square	0	10	6	0	10	9
Do. 2nd ..	do.	0	9	3	0	9	9
Do. 3rd, &c. ..	do.	0	7	3	0	7	9

Complete List of Contracs Open.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
BUILDING:			
June 30	Lambeth—Public Library	Borough Council	H. Wakeford & Sons, 267 Clapham Road, S.W.
" 30	Hebburn-on-Tyne—Chancel	Council	Hedley School, Argyle Street, Hebburn.
" 30	Slough—Alterations and Additions to School	I. Atkinson	Lee & Farr, Architects, Slough.
" 30	Bridlington—Two Houses	Rural District Council	J. Earnshaw, Carlton House, Bridlington.
" 30	Leek—Pulling-down Hotel	Corporation	T. Winn & Sons, Architects, 92 Albion Street, Leeds.
" 30	Liverpool—Public Washhouse	Co-operative Dairy and Agricultural Society	Union Offices, Russell Street, Leek.
" 30	Penyrrheol, Wales—Improving Schoolroom	Wick National School	W. R. Court, Municipal Offices, Liverpool.
" 30	Spamout, co. Tyrone—Residence	Ulster Bank, Ltd.	T. Jones, Penyrrheol, Wales.
" 30	Wick, Bridgend—Repairs to School	Abercarn U.D.C.	J. Whitton, 13 Campsie Road, Omagh.
" 30	Ballyhaunis, Ireland—Bank House	Admiralty	G. E. Kibblewhite, Wick School, Bridgend.
" 30	Newbridge—Twenty-eight Cottages	Burgh Commissioners	W. H. Stephens & Son, Donegall Square North, Belfast.
July 1	Boscaille—Houses	Fermanagh Protestant Board of Education	Council Offices, Abercarn.
" 1	Cliff Creek—Houses	Admiralty	Director of Works Department, Admiralty, 21 Northumberland Avenue, W.C.
" 1	Ashwater, Devon—Repairing Transept, &c.	Director of Works Department, Admiralty, 21 Northumberland Avenue, W.C.	Rectory, Ashwater Church, Ashwater, Devon.
" 1	Cowdenheath, Scotland—Town House	Director of Works Department, Admiralty, 21 Northumberland Avenue, W.C.	T. H. Ure, 43 Carnegie Street, Dunfermline.
" 1	Enniskillen—Works at Portora Royal School	Director of Works Department, Admiralty, 21 Northumberland Avenue, W.C.	Headmaster, Portora Royal School, Enniskillen.
" 1	High Bickington—Alterations to Chapel	Director of Works Department, Admiralty, 21 Northumberland Avenue, W.C.	Supply Stores, High Bickington.
" 1	Alderby Steeple, Northallerton—Wall	Director of Works Department, Admiralty, 21 Northumberland Avenue, W.C.	Churchwardens, Alderby Steeple Vicarage, Northallerton.
" 1	Caerau, near Maesteg, Wales—Hotel, &c.	Director of Works Department, Admiralty, 21 Northumberland Avenue, W.C.	P. J. Thomas, Station Hill, Bridgend.
" 1	Crofts, Scotland—House	Director of Works Department, Admiralty, 21 Northumberland Avenue, W.C.	C. C. Dalg, Architect, Elgin.
" 1	Kenfig Hill, Wales—Additions and Alterations to Six Cottages	Director of Works Department, Admiralty, 21 Northumberland Avenue, W.C.	Mason's Arms, Kenfig Hill, Wales.
" 1	Manorhamilton, Ireland—Roof on Church, &c.	Director of Works Department, Admiralty, 21 Northumberland Avenue, W.C.	J. Nixon, The Stores, Manorhamilton.
" 1	West Hartlepool—Alterations to School	Director of Works Department, Admiralty, 21 Northumberland Avenue, W.C.	H. Barnes, Bank Chambers, Scarborough Street, West Hartlepool.
" 2	Bognor, Sussex—Two Cottages	Director of Works Department, Admiralty, 21 Northumberland Avenue, W.C.	W. Macintosh, Surveyor, 22 Worthing Road, Horsham.
" 2	Darlington—Additions to Hospital	Director of Works Department, Admiralty, 21 Northumberland Avenue, W.C.	G. Winter, Borough Surveyor, Town Hall, Darlington.
" 2	Harlow, Essex—Abutments, &c.	Director of Works Department, Admiralty, 21 Northumberland Avenue, W.C.	P. J. Sheldon, Chief Surveyor, Chelmsford.
" 2	Llanely—Vestry	Director of Works Department, Admiralty, 21 Northumberland Avenue, W.C.	H. Hughes, Pwll, Llanely.
" 2	Wath, Yorks—Alterations to Police Station	Director of Works Department, Admiralty, 21 Northumberland Avenue, W.C.	Police Station, Wath, Yorkshire.
" 2	Shipley—Alterations, &c., to Farmhouse	Director of Works Department, Admiralty, 21 Northumberland Avenue, W.C.	W. Buck, Architect, North Street, Horsham.
" 2	Llandeilo—Resealing, &c.	Director of Works Department, Admiralty, 21 Northumberland Avenue, W.C.	The Post Office, Llandeilo, Kidwelly.
" 2	Merrymount, Ireland—Cottage, &c.	Director of Works Department, Admiralty, 21 Northumberland Avenue, W.C.	J. Pansing, Town Hall, Wicklow.
" 2	Windsor—Alterations to Rooms	Director of Works Department, Admiralty, 21 Northumberland Avenue, W.C.	Engington & Summerbell, 7 Park Street, Windsor.
" 2	Zion, near Chacewater—New Chapel	Director of Works Department, Admiralty, 21 Northumberland Avenue, W.C.	W. Wilkins, Gressbrowne.
" 4	Gainsborough—Public Library	Director of Works Department, Admiralty, 21 Northumberland Avenue, W.C.	Scorer & Gamble, Bank Street Chambers, Lincoln.
" 4	Chester-le-Street—Alterations to Walls	Director of Works Department, Admiralty, 21 Northumberland Avenue, W.C.	Superintendent's Office, Ropery Lane, Chester-le-Street.
" 4	Queenstown, Ireland—Reading-Room	Director of Works Department, Admiralty, 21 Northumberland Avenue, W.C.	S. F. Hynes, 21 South Mall, Cork.
" 4	Shipley, near Huddersfield—Residence	Director of Works Department, Admiralty, 21 Northumberland Avenue, W.C.	E. W. Lockwood, Architect, Huddersfield.
" 5	Clitheroe, Lancs—Free Library	Director of Works Department, Admiralty, 21 Northumberland Avenue, W.C.	S. Butterworth & Duncan, Rochdale.
" 5	Eshdalemuir, Scotland—Observatory	Director of Works Department, Admiralty, 21 Northumberland Avenue, W.C.	W. T. Oldrive, Architect, 3 Parliament Square, Edinburgh.
" 5	Leyton, Essex—Repairs to School	Director of Works Department, Admiralty, 21 Northumberland Avenue, W.C.	W. Jacques, 2 Fen Court, Fenchurch Street, E.C.
" 5	Tipton—School Renovation	Director of Works Department, Admiralty, 21 Northumberland Avenue, W.C.	E. Richards, Education Offices, Owen Street, Tipton.
" 5	Tipton—Repairs, &c., to School	Director of Works Department, Admiralty, 21 Northumberland Avenue, W.C.	A. Long, Architect, 21 New Street, West Bromwich.
" 5	Windsor—Two Cottages	Director of Works Department, Admiralty, 21 Northumberland Avenue, W.C.	E. A. Stickland, Surveyor, Alma Road, Windsor.
" 5	Cork—Council Chamber	Director of Works Department, Admiralty, 21 Northumberland Avenue, W.C.	W. H. Hill & Son, 28 South Mall, Cork.
" 6	Dorchester—Reconstruction of Church, &c.	Director of Works Department, Admiralty, 21 Northumberland Avenue, W.C.	W. E. Dibben, 40 Icenway, Dorchester.
" 7	Argoed, Mon.—Hotel, &c.	Director of Works Department, Admiralty, 21 Northumberland Avenue, W.C.	B. J. Francis, Architect, Abergavenny.
" 7	Glasgow—Convenience	Director of Works Department, Admiralty, 21 Northumberland Avenue, W.C.	Office of Public Works, City Chambers, 64 Cochrane St., Glasgow.
" 7	Thatcham, Berks—Police Station	Director of Works Department, Admiralty, 21 Northumberland Avenue, W.C.	County Surveyor's Office, Thatcham, Berks.
" 7	Maerdy—Thirty Cottages	Director of Works Department, Admiralty, 21 Northumberland Avenue, W.C.	W. Davis, Engineer, Maerdy Collieries, Glam.
" 9	Underbarrow—Rebuilding Bridge	Director of Works Department, Admiralty, 21 Northumberland Avenue, W.C.	G. B. Atkinson, Jasmine Cottage, Milnthorpe.
" 9	Cardigan—Extension to Church	Director of Works Department, Admiralty, 21 Northumberland Avenue, W.C.	John Evans, Auctioneer, Cardigan.
" 9	Blaenffos, Wales—House, &c.	Director of Works Department, Admiralty, 21 Northumberland Avenue, W.C.	T. Luke, Post Office, Blaenffos, R.S.O.
" 11	Stretdorf, Manchester—School	Director of Works Department, Admiralty, 21 Northumberland Avenue, W.C.	E. Woodhouse, 88 Mosley Street, Manchester.
" 11	Barnes—Porter's Lodge, &c.	Director of Works Department, Admiralty, 21 Northumberland Avenue, W.C.	Surveyor, Council Offices, High Street, Mortlake.
" 12	Tirphill—Retort House	Director of Works Department, Admiralty, 21 Northumberland Avenue, W.C.	G. Kenshole, Architect, Bargoed.
" 14	Wimbledon—Extension to Boiler-house	Director of Works Department, Admiralty, 21 Northumberland Avenue, W.C.	Engineer's Office, Broadway, Wimbledon.
" 15	Middle Rasen, Lincs—Additions to Schools	Director of Works Department, Admiralty, 21 Northumberland Avenue, W.C.	Scorer & Gamble, Architects, Bank Street Chambers, Lincoln.
" 17	Camberley—Council Offices	Director of Works Department, Admiralty, 21 Northumberland Avenue, W.C.	Surveyor to the Council, High Street, Camberley.
" 22	Berwick-on-Tweed—Alterations to Property	Director of Works Department, Admiralty, 21 Northumberland Avenue, W.C.	W. Gray, 2 Ivy Place, Berwick-on-Tweed.
" 23	Rio-de-Janeiro—Theatre	Director of Works Department, Admiralty, 21 Northumberland Avenue, W.C.	Commercial Intell. Branch, Board of Trade, 50 Parliament St., S.W.
ENGINEERING:			
June 30	Hartlepool—Lifeboat Station	Royal National Lifeboat Institution	S. H. Belk and A. Belk, Royal National Lifeboat Institution, Hartlepool.
" 30	Durham—Rotary Washer Scrubber	Gas Company	A. B. Tobez, Gas Company, Durham.
" 30	Bollow—Sea Wall	Commissioners of Sewers	J. R. Bennett, Chaxhill House, Chaxhill, near Westbury-on-Severn, Gloucestershire.
" 20	London, S.E.—River Wall	Lambeth Borough Council	H. Edwards, Engineer, 346 Kennington Road, S.E.
" 30	Manchester—Motors	Electricity Committee	F. E. Hughes, Town Hall, Manchester.
" 30	Chorlton-cum-Hardy, Lancs—Syphon, &c.	Urban District Council	A. H. Mountain, Surveyor, Town Hall, West Didsbury.
" 30	Edinburgh—Extension of Filters	Edinburgh and District Water Trustees	W. A. Tait, 72A George Street, Edinburgh.
" 30	Edinburgh—Valve Rods, &c.	Edinburgh and District Water Trustees	J. W. A. Tait, 72A George Street, Edinburgh.
" 30	Fareham—Extension to Water Mains	Urban District Council	W. Butler, Engineer, Quay Street, Fareham.
July 1	Exeter—Plant	Corporation	H. D. Munro, Electrical Engineer, Exeter.
" 1	Rochdale—Dynamo	Corporation	Lacey, Sillar & Leigh, 3 Queen Anne's Gate, Westminster, S.W.
" 2	Winchelsea—Water Main	Rural District Council	E. J. Cory, Surveyor, High Street, Rye.
" 4	Hounslow—Electricity Meters	Urban District Council	J. & J. S. Enright, 68 Lincoln's Inn Fields, London, W.C.
" 4	Dunfermline—Waterworks	District Committee of the Fife County Council	W. K. Copland, Engineer, Glasgow.
" 4	Johannesburg—Cables, &c.	Municipal Tramways & Electric Supply	Nordey & Dawbarn, 82 Victoria Street, S.W.
" 4	Bridgwater—Laying Pipes	Rural District Council	R.D.C. Offices, Bridgwater.
" 5	Windsor—Weighbridge, &c.	Guardians	P. Lovegrove, Clerk, Workhouse, Old Windsor.
" 5	Penrith, Cumberland—Plant	Urban District Council	G. Wainwright, Public Offices, Penrith.
" 5	India Office, S.W.—Goods Locomotives	Urban District Council	Director-General of Stores, India Office, Whitehall, S.W.
" 6	Littlehampton—Providing and Laying of Water Oldham—Coal Breaking and Elevating Plant	Corporation Gasworks Committee	H. Howard, Town Offices, Littlehampton.
" 6	Tenby, Pembroke—Lifeboat House, &c.	Royal National Lifeboat Institution	A. Andrew, Gas Offices, Oldham.
" 8	Mountain Ash—Excavating Rock and Soil, &c.	County Council	E. Bryant, Royal National Lifeboat Institution, Tenby, Pembroke.
" 9	Nairn, Scotland—Steel Bridge	Harbour Commissioners	Morgan & Elford, 1 Jeffreys Street, Mountain Ash.
" 11	Belfast—Electric Cranes	Highways Committee	H. T. Donaldson, County Clerk, Nairn.
" 11	Manchester—Laying underground Telephone Pipes	Urban District Council	W. A. Curtil, Harbour Office, Belfast.
" 11	Invergordon, Scotland—Extending Jetty, &c.	Rural District Council	City Surveyor's Office, Town Hall, Manchester.
" 11	Newark—Water Mains	Urban District Council	G. Gordon & Co., Engineers, Inverness.
" 11	Erith—Tramways	London County Council	H. Walker & Son, Albion Chambers, King Street, Nottingham.
" 12	London, S.E.—Cranes, &c.	Corporation	C. H. Fry, District Council Offices, Erith, Kent.
" 13	Derby—Machinery	Urban District Council	Clerk of the L.C.C., County Hall, Spring Gardens, S.W.
" 18	Trowbridge—Gas-Producing Plant, &c.	Urban District Council	J. Mansergh & Sons, 5 Victoria Street, Westminster.
No date	London—Reconstruction of a Bridge	London County Council	W. H. Stanley, Market House Chambers, Trowbridge.
IRON AND STEEL:			
June 30	Edinburgh—Joists and Collars	District Water Trustees	M. Fitzmaurice, County Hall, Spring Gardens, Westminster.
" 30	Kettering—Pipes	Urban District Council	W. A. Tait, 72A George Street, Edinburgh.
" 30	Manchester—Cast-iron Plates, &c.	Corporation	T. R. Smith, Market Place, Kettering.
" 30	London, E.C.—Stores	Central India Railway Co.	F. E. Hughes, Electricity Department, Town Hall, Manchester.

Complete List of Contracts Open—continued.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
IRON AND STEEL—cont.			
July 1	London, W.—Ironmongery, &c.	Ealing Town Council	C. Jones, Borough Surveyor, Town Hall, Ealing, W.
" 2	Windsor—Fire-escape Staircases	Lambeth Guardians	P. Lovegrove, 3 Park Street, Windsor.
" 2	Glasgow—Pipes	Corporation	I. R. Sutherland, 45 John Street, Glasgow.
" 2	Leeds—Gas Condenser, &c.	Gas Committee	R. H. Townsley, Gas Offices, East Parade, Leeds.
" 4	Bridgewater—Pipes, &c.	Rural District Council	T. M. Reed, Clerk, R.D.C. Offices, Bridgewater.
" 4	Settle—Pipes	Rural District Council	T. A. Foxcroft, Surveyor, Town Hall, Settle.
" 7	Salford—Stores	Gas Committee	W. W. Woodward, Engineer, Bloom Street, Salford.
Aug. 18	Rio-de Janeiro—Fishplates, &c.	Central Railway of Brazil	Central Railway of Brazil, Rio-de Janeiro.
PAINTING AND PLUMBING:			
June 30	Eccles, Lancs—Painting	Education Committee	Secretary, Education Offices, Eccles, Lancs.
" 30	Withington, Lancs—Painting	Urban District Council	A. H. Mountain, Surveyor, Town Hall, West Didsbury.
" 30	Wrexham—Cleaning, &c.	Education Committee	T. Bury, Clerk, Guildhall, Wrexham.
July 1	Lewes—Painting	East Sussex County Council	F. J. Wood, Surveyor, County Hall, Lewes.
" 1	Newark—Repainting, &c.	Education Committee	Surveyor's Office, Town Hall, Newark.
" 2	Carlow, Ireland—Painting Gates, &c.	County Council	Secretary, Court House, Carlow.
" 4	London, E.—Re-decoration	Stepney Borough Council	M. W. Jameson, 15 Great Alle Street, Whitechapel, E.
" 6	London, S.E.—Painting	Lambeth Guardians	Guardian's Offices, Brook Street, Kensington Road, S.E.
" 7	London, S.E.—Decorative Repairs	Guardians of Southwark Union	G. D. Stevenson, 13 and 14 King Street, E.C.
" 8	Colchester—Cleaning and Painting	Education Committee	C. E. Denton, 8 East Stockwell Street, Colchester.
" 9	Ipswich—Painting, &c.	Education Committee	E. T. Johns, Thoro'fare, Ipswich.
" 12	Letterkenny, Donegal—Plumbing, &c.	Committee of Management	J. P. McGrath, Commercial Buildings, Foyle Street, Londonderry.
ROADS AND CARTAGE:			
June 30	Gateshead—Paving, &c.	Corporation	J. Bower, Engineer, Town Hall, Gateshead.
" 30	Ramsgate—Making up	Town Council	Borough Surveyor, Albion House, Ramsgate.
" 30	Droghda, Lancs—Street Works	Urban District Council	C. Hall, 10 Ashton Road, Droghda, Lancs.
" 30	Duns, Scotland—Concrete Foot Pavement, &c.		J. Miller, Town Clerk, Duns, Scotland.
" 30	Worsley—Repaving, &c.	Urban District Council	Surveyor, Public Offices, Hilton Lane, Walkden.
July 1	Ashford—Road Works	Urban District Council	W. Terrill, Surveyor, North Street, Ashford.
" 2	Little Sutton, Cheshire—Lane	Wirral Rural District Council	T. Davies, 33 Kingsland Road, Birkenhead.
" 4	Stepping Flint	Rural District Council	E. Cliffs, Council Offices, New Shoreham, Sussex.
" 4	Gortnasate—Roadway, &c.	Board of Public Works	District Office of Works, Londonderry.
" 4	Arundel, Sussex—Flints	Town Council	E. I. Farrington, Surveyor, Town Hall, Arundel.
" 4	Napsbury, near St. Albans—Roads, &c.	Visiting Committee	W. G. Austin, Guildhall, Westminster, S.W.
" 4	Romford—Kerbing	Rural District Council	G. Lapwood, Surveyor, Victoria Chambers, Romford.
" 4	Waltham Abbey—Materials	Urban District Council	W. T. Streater, Highbridge Street, Waltham Abbey.
" 5	Leyton, Essex—Tar Paving	District Council	W. Jacques, 2 Fen Court, Fenchurch Street, E.C.
" 5	Tottenham—Making-up	Urban District Council	W. H. Prescott, Coopers Croft House, 112 High Road, Tottenham.
" 6	Clacton-on-Sea—Flints	Urban District Council	G. T. Lewis, Town Hall, Clacton-on-Sea.
" 6	London, W.—Street Improvement, &c.	Chiswick U.D.C.	J. Barclay, Town Hall, Chiswick.
" 6	Wanstead, Essex—Stone	Urban District Council	C. H. Bressey, Council Offices, Wanstead, N.E.
" 6	Wanstead, Essex—Steam Rolling	Urban District Council	C. H. Bressey, Council Offices, Wanstead, N.E.
" 8	Newmarket—Road Metalling	Urban District Council	L. J. Ennion, Deva Chambers, Newmarket.
" 9	Luton—Stones, &c.	Rural District Council	B. B. Franklin, Surveyor, 21 Market Hill, Luton.
" 12	Southampton—Street Works	Corporation	J. A. Crowther, Borough Engineer, Southampton.
" 13	Fulham—Making-up	Borough Council	F. Wood, Town Hall, Fulham, S.W.
No date	Paddington—Paving, &c.	Borough Council	Borough Surveyor, Town Hall, Paddington, W.
SANITARY:			
June 30	Ramsbottom, Lancs—Sewers	Urban District Council	J. Diggle & Son, Engineers, Hind Hill Street, Heywood.
July 2	Darlington—Scavenging	Rural District Council	J. Robinson, Union Offices, Darlington.
" 4	Norwich—Scavenging	Health Committee	Chief Sanitary Inspector, Guildhall, Norwich.
" 4	Cheshunt—Sewage-disposal	Urban District Council	Pollard & Tingle, 31 Old Queen Street, Westminster.
" 5	Dover—Sewers, &c.	Town Council	H. E. Stilgoe, Maison Dieu House, Dover.
" 8	Brighton—Drain Pipes	Corporation	F. J. C. May, Town Hall, Brighton.
" 11	Wandsworth—Sewer	Borough Council	Surveyor's Office, 215 Balham High Road, S.W.
" 13	Newcastle-under-Lyme—Sewage-disposal Works	Corporation	Willcox & Raikes, 63 Temple Row, Birmingham.
TIMBER:			
July 1	London, W.—Timber	Ealing Town Council	C. Jones, Town Hall, Ealing, W.
" 7	Salford—Timber	Gas Committee	W. W. Woodward, Engineer, Bloom Street, Salford.
No date	Paddington—Deal Block Paving, &c.	Borough Council	Borough Surveyor, Town Hall, Paddington, W.

List of Competitions Open.

DATE OF DELIVERY.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	DEPOSIT REQUIRED FOR CONDITIONS, &c.	FROM WHOM PARTICULARS MAY BE OBTAINED.
June 30	Peterborough—Library	£50, £25, £15.	£1	W. Mellows, Town Clerk, Peterborough.
July 2	Bury St Edmunds—Alterations to Shire Hall	£50, £30, £20.	£1	A. A. Hunt, County Architect, Sudbury, Suffolk.
" 30	Aberystwyth—Public Library	£30, £15.	£1 is.	A. J. Hughes, Town Clerk, Aberystwyth.
" 31	Grantham—Church			Rev. H. H. Surget, Wyville House, Dudley Road, Grantham.
Aug. 8	Glasgow—District Library, Pollokshields	£50, £30, £25.		James G. Munro, Town Clerk, City Chambers, Glasgow.
" 8	Glasgow—District Library, Townhead	£50, £30, £25.		James G. Munro, Town Clerk, City Chambers, Glasgow.
" 15	Whitehaven—Public Library	£30 and £20.	£1 is.	T. Brown, Town Clerk, Town Hall, Whitehaven.

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PARTNER WANTED with £1,000 to £1,500 to pay out retiring one, for old-established London business manufacturing specialties in heating and ventilating. Practical knowledge and connection amongst architects desirable. Terms very favourable for third share.—**H. M. G., c/o DIXONS, 195, Oxford Street, W.**

ROOFING BOARDS, 1 x 6 and 7, 8s. square; 10 squares, 7s. 6d. free on rails; oak quartering and planking, 2s. ft. cube.—**MAY & BUTCHER, Timber Merchants, Haybridge.**

WIRE NAILS, Mixed, 8s. per cwt.; 28 lbs., 2s. 3d.; Screws, mixed, 23s. per cwt.; 28 lbs., 7s. 6d.; wire, cut, wrought and malleable nails, tacks, shoe nails, rivets, &c., wholesale prices.—**MIDLAND NAIL WORKS, 25 and 26, Rea Street, Birmingham. (John Pyne, Proprietor.)**

Contracts Open.

COUNTY BOROUGH of BRIGHTON.

TO CONTRACTORS AND OTHERS.

Notice is hereby given that the Council of the said County Borough will receive TENDERS from such persons as may be willing to enter into a Contract for SUPPLYING such GLAZED DRAIN PIPES as may be required by the Corporation for the year ending 31st July, 1905.

The specification and form of Tender may be obtained on application at the Office of the Borough Engineer and Surveyor, Mr. FRANCIS J. C. MAY, Memb. Inst. C.E., F.S.I., at the Town Hall, Brighton.

Sealed Tenders, addressed to me and endorsed "Tender for Drain Pipes," must be left at my Office at the Town Hall before TEN o'clock in the FORENOON on FRIDAY, the EIGHTH day of JULY, 1904.

The Council do not bind themselves to accept the lowest or any Tender.

FRANCIS J. TILLSTONE,

Town Hall, Brighton.

Town Clerk.

6th June, 1904.

ROAD MAKING.

TENDERS required for FORMATION of new ROAD at Wood Green.

Plans and sections can be seen, and copies of specification obtained, upon personal application to Messrs. VIGERS & Co., 4, Frederick's Place, Old Jewry, E.C.

Tenders to be delivered to C. J. HAYTER, Esq., 84, Temple Chambers, Temple Avenue, E.C., before TWO o'clock on MONDAY, JULY 11th next.

The Company do not bind themselves to accept the lowest or any Tender.

Property & Land Sales.

By Order of Executors and Trustees.

HERSHAM, SURREY.

Valuable FREEHOLD LAND, about one mile from Walton Station, consisting of charming site for a gentleman's residence. An excellent 5-acre meadow, abutting on the River Mole, a small grass orchard and two good cottages, in all about 7½ acres.

MESSRS. DANIEL WATNEY & SONS are instructed to SELL the above by AUCTION, in Four Lots, at the Mart, Tokenhouse Yard, London, on THURSDAY, JULY 7th, 1904.

Particulars, with plan and conditions of sale may be obtained of STANLEY N. VIGERS, Esq., Solicitor, 8, Frederick's Place, Old Jewry, E.C.; and of the AUCTIONEERS, 32, Poultry, London, E.C.

PALMER'S GREEN.

HAZELWOOD PARK ESTATE.

The remaining portions of this VALUABLE LAND to be SOLD or LET on BUILDING LEASE in large or small blocks to meet the requirements of applicants. The neighbourhood is developing rapidly, and houses of a moderate class let and sell readily. Railway Station, five minutes walk, and Electric Trams in course of construction will pass the Estate.—Apply **HICKSON & SON, Surveyors, 31, Queen Victoria Street, E.C.**

EMPLOYMENT REGISTER.

Too late for Classification.

- 477.—ARCHITECT AND SURVEYOR'S ASSISTANT, working and detail drawings, specifications, quantities, and levelling, ex. refs.
- 478.—ARCHITECT, with own office or otherwise, can assist other architects; architectural, mechanical and water-colour drawings, tracings, models, &c.
- 479.—TRACINGS, contract and other drawings, assistance rendered to architects, mod. terms.
- 480.—SANITARY ENGINEER OR SURVEYOR'S ASSISTANT, qualified sanitary inspector, ex. in drainage and plumbing, refs.
- 481.—PLUMBER, gas and hot water fitter, young, would suit jobbing firm.
- 482.—ARCHITECT'S CHIEF ASSISTANT (A.R.I.B.A.), good varied ex. in all branches, design and superintendence, quantities, &c. Provinces.
- 483.—MACHINIST (Joiner), age 45, spindle or four cutter, or any class of machinery.
- 484.—BUILDER'S CLERK, age 22, jobbing a/c's, ledgers, &c., &c. Remington typewriter, good refs., mod. s.
- 485.—GENERAL FOREMAN, age 37, abstainer, ex. carpenter by trade, good refs.
- 486.—ARCHITECT'S ASSISTANT, Junior, fully qualified, ex. refs., s. 30s.
- 487.—PAPERHANGER, competent, reliable, abstainer, ex., wants piecework. Decorating also, or take charge.
- 488.—GENERAL FOREMAN, ex. in Board School and Sanitary work, good refs.
- 489.—BRICKWORK or POINTING, by rod or job, wanted.
- 490.—ARCHITECT (A.R.I.B.A.), desires evening work.
- 491.—ARCHITECT AND SURVEYOR'S ASSISTANT, age 27, 9 yrs. ex., wkg. drawings, details, specifications, surveying and levelling, iron and steel work.

See p. xxii for the Employment Register.

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Builders' Journal,
Great New Street,
London, E.C.

5 O'CLOCK P.M. MONDAY IS THE LATEST TIME FOR RECEIVING "WANT" ADVERTISEMENTS. OFFICE: 6, GREAT NEW STREET, FETTER LANE, E.C.

Tenders.

Information from accredited sources should be sent to "The Editor" at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Addressed postcards on which lists of tenders may be stated will be sent post free on application to the Manager, BUILDERS' JOURNAL, 6, Great New Street, Fetter Lane, E.C.

Carlisle.—For the construction of works for the collection of water from springs and streams in the watershed of the River Gelt, for the Corporation. Messrs. James Mansergh & Sons, engineers, 5, Victoria Street, Westminster:—

Morrison & Mason, Ltd., Glasgow	£176,089	16	8
W. Scott & Middleton, London	163,688	8	5
T. C. Starkey, Hull	158,903	3	10
J. Best, Edinburgh	142,631	6	6
J. Aird & Sons, London	134,632	15	8
W. Kennedy, Ltd.,* Partick, N.B.	120,377	19	3
Bushby & Sons, Leyburn	119,136	15	3
R. C. Brebner & Co., Edinburgh	114,561	4	3
G. Mackay & Sons, Glasgow	97,991	15	6

* Accepted.

Cheltenham.—Accepted for the erection of a small house on the Wickfield's Estate, Cleeve Hill, near Cheltenham. Mr. Thomas Malvern, architect and surveyor, 21, Winchcombe Street, Cheltenham:—

A. Jend, Cleeve Hill	£510
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Cheltenham.—For the erection of four small houses in Winstonian Road. Mr. Thomas Malvern, architect and surveyor 21, Winchcombe Street, Cheltenham:—

A. Wilson	£1,303	0	0
H. Burrows	1,102	15	0
W. Drew	1,095	3	0
W. Cresswell	966	16	9
G. Loveday,* Gloucester Road	881	10	0

* Accepted.

Cheltenham.—For the construction of a road on the Haynes Building Estate, Cleeve Hill, near Cheltenham. Mr. Thomas Malvern, architect and surveyor, 21, Winchcombe Street, Cheltenham:—

G. Jend	£442	10	0
Mark Williams & Co	339	0	0
A. Jend,* Cleeve Hill	300	0	0

* Accepted.

Exeter.—For the erection of a new infirmary and alterations to the existing infirmary at the Exeter City Workhouse, for the Guardians. Mr. R. M. Challice, architect, 14, Bedford Circus, Exeter:—

Wilkins & Sons, Bristol	£14,489	8	0
Dart & Pollard, Paignton	13,300	10	0
A. N. Coles, Plymouth	12,030	8	6
W. G. Coles, Aliphington, near Exeter	11,491	9	0
W. E. Blake, Plymouth	11,330	9	0
Stephens & Son, Ltd.	11,299	8	0
W. Brealy, St. Thomas	10,899	9	6
G. Herbert	10,616	9	0
Westcott, Austin & White	10,599	7	0
Ham & Passmore,* Sidwell Street	10,514	8	0

* Accepted. [Rest of Exeter.]

Gravesend.—For alterations and additions to out-patients' block at the Gravesend Hospital. Mr. W. M. Dean, A.R.I.B.A., architect, 21, Park Place, Gravesend. Quantities by Messrs. J. Gandy & Bennis, 22, Essex Street, Strand, W.C.:—

Myall & Upson, Clacton-on-Sea	£2,300	0	0
W. Manders, Leyton, Essex	2,137	5	10
J. M. Dering	1,900	0	0

ROOFING SLATES:

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ALFRED CARTER & CO., LIVERPOOL.

B. E. Nightingale, Albert Embankment, S.E.	£1,688	0	0
Thomas & Edge, Woolwich	1,681	0	0
A. E. Tong	1,674	1	5
Beal & Hubbard	1,673	0	0
Multon & Wallis	1,618	0	0
G. Browning, Canterbury	1,567	0	0
W. H. Archer & Son,* The Grove	1,495	0	0

* Accepted. [Rest of Gravesend.]

London, S.W.—For the erection of offices and printing works at Castle Lane, Westminster, S.W., for Messrs. Norton & Gregory, Ltd. Messrs. L. Littlewood & O. Mahomed, architects, 3A, Bank Buildings, Balham, S.W. Quantities supplied by Mr. E. H. Dance, surveyor, 185, Victoria Street, S.W.:—

T. Roberts	£7,900
Lole & Lightfoot	7,840
M. Pearson	7,660
F. J. Shopland	7,547
Patman & Fotheringham	7,480
J. Carmichael	7,450
F. G. Minter	7,332
Kirk & Kirk	7,187
B. E. Nightingale	6,987
Rice & Son	6,969
W. H. Lorden & Son*	6,887

* Accepted.

London, N.—For an additional storey to the maternity wards at the workhouse, Upper Edmonton, N., for the Guardians of Edmonton Union. Mr. T. E. Knightley, architect, 106, Cannon Street, E.C. Quantities by Mr. Joseph Peebles, 26, John Street, Bedford Row, London, W.C.:—

General Builders, Ltd.	£3,379	0	0
J. Thomas	3,301	11	0
A. E. Townsend & Coles	3,273	0	0
A. Fairhead & Son	3,114	0	0
Green & Smith	2,695	0	9
A. Porter	2,991	0	0
A. Monk	2,989	0	0
W. Lawrence & Son	2,918	0	0
Pavey & Son	2,906	0	0
C. R. Price	2,857	0	0
Banyard & Son	2,843	0	0
S. L. Grist	2,678	0	0
H. Knight & Son,* Tottenham	2,550	0	0

* Accepted.

London, S.W.—For alterations and additions to the Royal Court Theatre, Sloane Square, S.W. Mr. C. E. Lancaster Parkinson, A.R.I.B.A., architect, 44, Bedford Row, W.C.:—

Patman & Fotheringham	£4,163
T. W. Heath & Sons	4,081
W. Willett	3,960
Lole & Lightfoot	3,907
Townsend & Coles	3,893

H. Lovatt	£3,858
Foster Brothers	3,854
Leslie & Co.	3,718
Spencer, Santo & Co.	3,400

London, E.—Accepted for the erection of a house in Water Lane, Stratford. Messrs. George Baines, F.R.I.B.A., and R. Palmer Baines, architects, 5, Clement's Inn, Strand, W.C.:—

Messrs. Battley, Sons & Holness .. £1,162

Stone (Staffs).—For new tramp wards at workhouse, for the Guardians. Messrs. Jones & Hilton, architects, Stone. Quantities by the architects:—

W. Grant & Son	£1,425	0	0
W. Whitfield	1,420	0	0
G. Ellis	1,389	0	0
J. Bagnall	1,359	0	0
W. Cooke	1,346	0	0
Tomkinson & Betteley	1,327	0	0
T. Godwin	1,313	0	0
J. Wilcox	1,298	11	2
T. Moss	1,278	11	0
J. Charlesworth,* Wolstanton	1,189	0	0

* Accepted.

Sutton Coldfield.—For the erection of a town hall. Mr. W. A. H. Clarry, A.M.I.C.E., borough surveyor:—

Turville & Son	£13,059
F. L. Jones	12,316
A. N. Coles	12,250
T. Rawbotham	11,875
J. Barnsley & Son	11,798
S. Bastow & Co.	11,726
Streather & Hill	11,610
Whitall & Sons	11,600
White & Sons	11,534
W. Sapcote	11,387
H. Willcock & Co.	11,337
A. E. Goff	11,286
R. Fenwick, Ltd.	11,255
T. Johnson	11,247
J. H. Vickers, Ltd.	11,099
W. H. James	11,090
J. Parnell & Sons	11,044
W. Hopkins	11,000
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W. Moss & Sons	10,767
J. E. Moorhouse	10,755
W. H. Gibbs	10,650
C. Wright	10,430
J. Dallow & Sons	10,380
I. Langley	10,227
T. Elvins	10,100
E. Crowder	10,099

* Accepted.

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When writing to Advertisers please mention The Builders' Journal.

Trade and Craft.

Drainage Fittings, Pipes and Connections.

For many years cast-iron drains have been increasing in favour, and at the present time it is clearly recognized that they form quite the best system for important work; they are not liable to fracture like stoneware pipes, and they enable absolutely tight joints to be made; besides which, if properly treated inside, they can be maintained in excellent condition. A new catalogue of fittings for such drains has just been issued by Mr. John Jones, of Carlyle Works, Church Street, Chelsea, S.W., and in this a number of intercepting chambers and traps, gulleys, bends, manhole covers and ventilators are illustrated. The improved intercepting chamber shown has a patent ventilating cover and frame which allows condensed water and any liquid that may percolate through vent-holes into channel to be carried away by a draining pipe and discharge into

dry rubbish; the inspection chamber cover has a double seal and is constructed so that the packing cannot rot, allowing foul air to escape; and the same care in design has been given to the inspection eye cover, the clearing arm and other parts, all traps and pipes being specially smooth inside and either coated with Dr. Angus Smith's solution or glass-enamelled. Mr. Jones's bridge for inspection chambers is of heavy wrought-iron, with gunmetal screw and lifting rings; it is neat in appearance, easy to fix and calculated to keep an absolutely gas-tight joint. Another speciality is the improved "Adapta" cast-iron gully, which has the bottom outlet arranged to suit the exact fall of drain, while the middle and top pieces are made in various lengths to form connection between ground level and trap. Of the numerous admirable manhole covers shown in the catalogue we specially note one with a triple seal—the first seal being obtained by a flange on the outer edge of the top cover, the second by a deep inner flange sealed

with liquid, and the third by the inner cover, on the patent system of self-sealing by condensation.

Firegrates.

At the beginning of their new catalogue of firegrates, mantels, &c., Messrs. Barnard, Bishop & Barnards, Ltd., give seven sections and plans showing the various forms of fire baskets supplied with their slow combustion and other grates. Of these the "Teale" is particularly effective, as the upper brick deflects the heat well into the room; the grate is loose and supported on a gallery of firebricks, so that it can be easily removed and renewed when necessary without disturbing the brickwork. Barless grates, however, are a speciality of this firm, and of the "Victoria" basket used in them it is said that perfect immunity from fire can be secured if the bottom brick has a good bed of concrete "and of course no wood beam should be allowed in proximity to the bottom or back bricks"—which last sentence

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Over 3,000 of our rollers in use by North-Eastern Rly. Co.

For FACTORIES, WAREHOUSES, COACH-HOUSES.
SEND FOR OUR LISTS OF PATENT COMPOUND ROLLERS.
Over 1,000 in use by Nobility and others.

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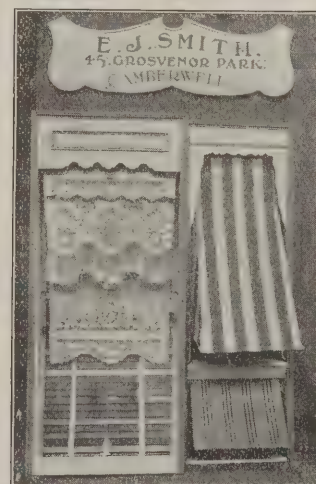
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When writing to Advertisers please mention The Builders' Journal.

at once recalls the fire in the Queen's bedroom at Sandringham last year. Turning to the numerous photographic illustrations of grates and mantels, we notice a number of good designs, though we think the firm would be well advised to improve the embellishment of a few, such as Nos. 641, 642 and 709, while the mantel register with overmantel No. 839 and the cast-iron overmantel No. 875 are quite unworthy of being included in the catalogue. To particularize on the many designs illustrated would serve no purpose. We can only repeat that they are very pleasing as a whole. Besides mantels of all kinds, hot-air stoves are shown, the improved independent No. 687 being especially good. Curbs in wrought-iron, brass, &c., form a prominent part of the catalogue, while ranges, boilers, radiators, valves, &c., are comprised in a second section. As regards boilers we may draw attention to the "Ideal" series, which are cast in sections, so that they are readily fixed; even with the largest size the parts can be passed through any ordinary doorway into the basement of a building—an impossibility with moderately large boilers when made in the ordinary way. These cast-iron sectional boilers withstand the action of water much longer than those of wrought-iron, and the arrangement of the flues and waterways secures a maximum of heating with a minimum of fuel consumption. Messrs. Barnards' works are at Norwich, their London office being at 110, Cannon Street, E.C.

New Schools in Derby Road, Gloucester, are to be erected by the Education Committee of the Corporation, who have appointed Mr. J. Fletcher Trew, M.S.A., of Gloucester, architect. Accommodation will be provided for 356 boys, 35 girls and 450 infants.

Coming Events.

Thursday, June 30.

SOCIETY OF ANTIQUARIES.—Meeting at 8.30 p.m.

Saturday, July 2.

NORTHERN ARCHITECTURAL ASSOCIATION.—Annual Excursion to Naworth, Lanercost and Carlisle.

Saturday, July 9.

NORTHERN ARCHITECTURAL ASSOCIATION.—Students' Sketching Club Excursion.
ARCHITECTURAL ASSOCIATION.—Fourth summer visit.

JUNIOR INSTITUTION OF ENGINEERS.—Visit to Admiralty Harbour Works at Dover.

Saturday, July 23.

NORTH OF ENGLAND INSTITUTE OF MINING AND MECHANICAL ENGINEERS.—Meeting at 1.30 p.m.

Bankruptcies.

[Abbreviations: R.O.—receiving order; P.E.—public examination; C.C.—county court; O.R.—official receiver; Adj.—Adjudication.]

DURING THE WEEK ending June 24th seventeen failures in the building and timber trades in England and Wales were gazetted.

H. CLARK, builder, Carshalton. R.O. June 16th.

T. MARSHALL, builder, Rochdale. R.O. June 15th.

J. WARD, builder, Tooting. R.O. June 15th.

J. WRIGHT, builder and contractor, Birkenhead. R.O. June 15th.

W. CHINNICK, builder, Poplar. R.O. June 13th. P.E., London Bankruptcy Court, July 27th, at 11.30.

G. COUPE, builder and contractor, St. Helens. R.O. June 14th. P.E., Liverpool C.C., July 7th, at 11.

J. SAINT, builder and contractor, Hexham. R.O. June 13th. P.E., Newcastle-on-Tyne C.C., July 14th, at 11.

G. PERKINS, builder, West Bridgford. P.E., Nottingham C.C., July 8th, at 10.30.

J. G. CULLINGFORD, builder, Horley. P.E., Croydon C.C., July 13th, at 11. Adj. June 15th.

R. VAUGHAN, builder, Denbigh. First meeting, Crypt Chambers, Chester, June 29th, at 2.45. P.E., Magistrates' Room, Bangor, July 7th, at 12.30.

T. FARR, builder, Pontypridd. First meeting, 135, High Street, Merthyr Tydfil, June 29th, at 12. P.E., Pontypridd C.C., July 19th, at 11.15.

J. THOMAS, builder, Pontardawe. First meeting, O.R.'s, Swansea, June 30th, at 12. P.E., Town Hall, Neath, July 5th, at 11.30.

KILLE BROTHERS, builders, Frogmore. R.O. June 16th. First meeting, O.R.'s, Portsmouth, June 23th, at 3. P.E., Portsmouth C.C., July 25th, at 11.

STICKLAND & BLAKEMAN, builders and decorators Hampton. P.E., Kingston C.C., July 12th, at 2.30. Adj. June 18th.

New Companies.

STONWOOD FIREPROOF FLOORING CO., LTD. Capital £4,000 in £1 shares.

E. WOOD, LTD., maker of paints, &c., 29, Stephenson Street, Canning Town, E. Capital £10,000 in £10 shares.

I. J. CLOW LTD., art metal and wood workers, &c., Alderman's Walk, Bishopsgate Street Within, E.C. Capital: £3,000 in £1 shares.

WESTCLIFF TIMBER AND SLATE CO., LTD., Dashwood House, New Broad Street, E.C. Capital: £1,000 in £1 shares.

DUROPAVE CO., LTD., builders, contractors, &c., 69, King William Street, London, E.C. Capital: £5,000 in £1 shares.

Competition for Cottage Homes, Billericay, Brentwood.—In March last the Guardians of Billericay advertised for designs in competition for proposed cottage homes. They have now accepted the design submitted by Mr. T. Hillier Pyke, architect, of Prestbury Road, Forest Gate, who has been instructed to proceed with the necessary working drawings.

The Junior Institution of Engineers recently paid a visit to the motor car works of Messrs. D. Napier & Sons, Acton Vale. These consist principally of one large building on the ground level, 282ft. by 124ft., more than half of which is used as a machine shop and the remainder for an erecting shop, where the cars reach their final stage before being tested, the central portion being used as a stores. Last Saturday the Institution visited the Chelsea generating station of the Underground Electric Railway and the L.C.C. pumping station in Lot's Road, while on Saturday, July 9th, an excursion is to be made to Dover.

Used by H.M. Board of Works, London County Council, and specified by the leading Architects.

PARTITIONS

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